

FAA APPROVED

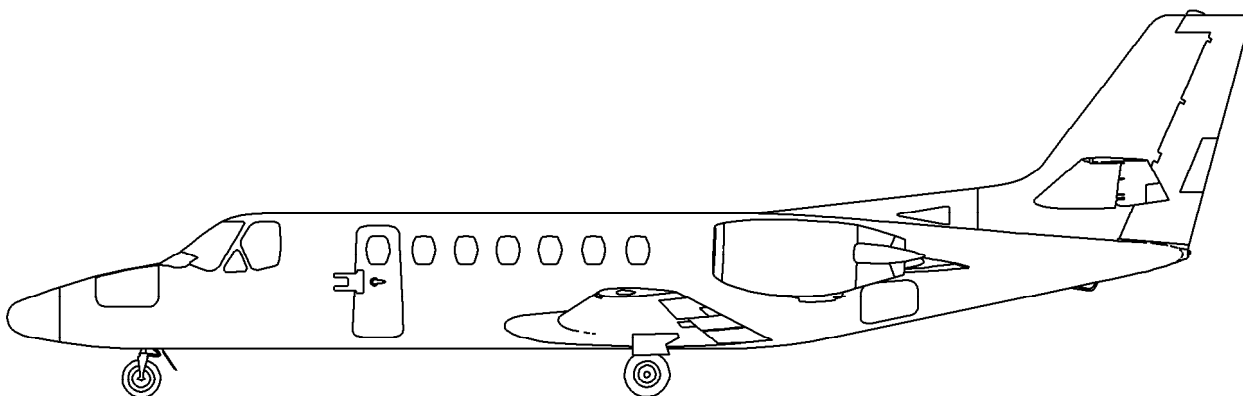
Airplane Flight Manual

MODEL 560

CitationV

Ultra

SERIAL 560-0260 THRU -0538



SERIAL NUMBER _____

REGISTRATION NUMBER _____

APPROVED BY Carol Blacklock

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 27, 1994

27 MAY 1994

LOG OF EFFECTIVE PAGES

Use this page to determine the currency and applicability of your FAA Approved Airplane Flight Manual. Pages affected by the current revision are indicated by an asterisk (*) preceding the pages listed under the Page column. Determine which pages are applicable to your airplane under the Airplane Configuration Code. As required by the FAA, only the pages applicable to your airplane should be retained in the FAA Approved Airplane Flight Manual.

Pages that apply to a certain airplanes have the applicable configuration code on the bottom of the page. Pages marked AA apply to all airplanes. Refer to Airplane Configuration Codes on page 1-7/1-8.

Following is a description of the Log of Effective Pages columns:

Page - FAA Approved Airplane Flight Manual Page Numbers.

Page Status - Indicates if the page has been added, revised or deleted by the current revision.

Revision Number - Indicates the revision number.

Configuration Code - Indicates page effectivity by two letter code.

Revision Number	Date	Revision Number	Date
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Revision 2	14 November 1994	Revision 8	24 March 1999
Revision 3	15 March 1995	Revision 9	13 October 2000
Revision 4	23 June 1995	Revision 10	22 June 2001
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1-1/1-2	Revised	8	AA
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* 1-6 thru 1-8	Revised	11	AA
* 2-1/2-2	Revised	11	AA
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2-12	Revised	9	AA
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* 2-18	Revised	11	AA
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3-26 thru 3-28	Revised	5	AA
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* 3-34.2	Added	11	AK
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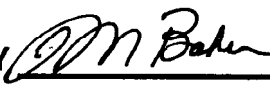
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4-204 thru 4-232	Revised	10	AA
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* 4-242.2	Added	11	BN
4-243	Added	10	BL
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* 4-243.2	Added	11	BN
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7-15 thru 7-34	Added	9	AA
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INTRODUCTION
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INTRODUCTION

COVERAGE

The Flight Manual, including supplements in the airplane at the time of delivery from Cessna Aircraft Company contains information applicable only to that particular airplane. The basic manual is applicable to airplane serial 560-0260 thru -0538.

NOTICE

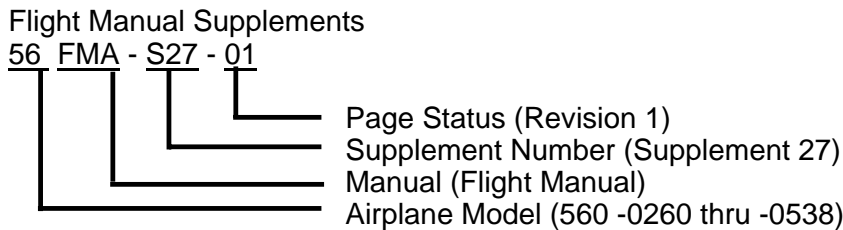
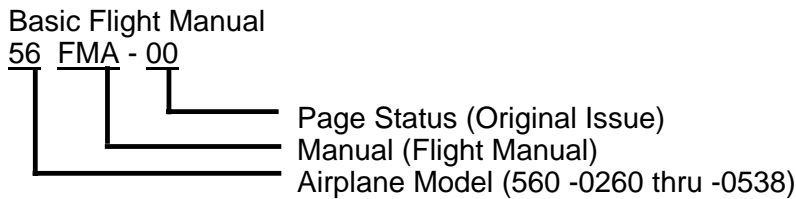
THE SUPPLEMENTS IN SECTION V OF THIS FLIGHT MANUAL CONTAIN AMENDED OPERATING LIMITATIONS, OPERATING PROCEDURES, PERFORMANCE DATA AND OTHER NECESSARY INFORMATION FOR AIRPLANES CONDUCTING SPECIAL OPERATIONS AND FOR AIRPLANES EQUIPPED WITH SPECIFIC OPTIONS. OPERATORS SHOULD REFER TO SECTION V TO ENSURE THAT ALL LIMITATIONS AND PROCEDURES APPROPRIATE FOR THEIR AIRPLANE ARE OBSERVED.

UNIT AND SERIAL NUMBER

On all Ultra Model 560 airplanes, both the serial and unit number are stamped into the airplane identification nameplate. This manual uses serial numbers to describe airplane effectivities.

FLIGHT MANUAL PART NUMBER

Each page in the FAA Approved Airplane Flight Manual contains the part number of the manual and the page status of each page; Refer to the following example:




REVISIONS

As new information becomes available for your airplane, revisions will be issued to all registered owners. It is the pilot's responsibility to assure that this FAA Approved Airplane Flight Manual is complete and current at all times.

REVISED MATERIAL INDICATORS

Two types of revised material indicators will be used in this manual.

A bar will extend the full length of deleted, new or revised text added on new or presently existing pages. This bar will be located adjacent to the applicable text in the margin on the left side of the page.

A miniature pointing hand will be used in an existing illustration, pointing to the revised area, when practical. Should the illustration be new material, the miniature hand will point to the figure number; i.e., Figure x-x. 

All revised pages will carry the revision number opposite the page number on the applicable page. A list of revisions is located at the beginning of the list of effective pages.

DEFINITIONS

Performance definitions are available in Section IV; the remaining definitions are listed as follows:

WARNING

OPERATING PROCEDURES, TECHNIQUES, ETC., WHICH WILL RESULT IN PERSONAL INJURY OR LOSS OF LIFE IF NOT CAREFULLY FOLLOWED.

CAUTION

OPERATING PROCEDURES, TECHNIQUES, ETC., WHICH WILL RESULT IN DAMAGE TO EQUIPMENT IF NOT CAREFULLY FOLLOWED.

NOTE

An operating procedure, technique, etc., which is considered essential to emphasize

DEFINITIONS (Continued)**LAND AS SOON AS POSSIBLE**

Land at the nearest suitable airport. Extreme situations could require off airport landing. Primary consideration is safety of occupants.

LAND AS SOON AS PRACTICAL

Land at a suitable airport. The primary consideration is the urgency of the emergency or abnormal situation. Continuing to the destination or an alternate with appropriate service facilities, may be an option.

EMERGENCY PROCEDURES

An emergency procedure is one requiring the use of special systems and/or regular systems in order to protect the occupants and the airplane from serious or critical harm. Usually, these procedures require immediate action.

ABNORMAL PROCEDURES

An abnormal procedure is one requiring the use of special systems and/or the alternate use of regular systems which, if followed, will maintain an acceptable level of airworthiness or reduce operational risk resulting from a failure condition.

NORMAL PROCEDURES

A normal procedure is one which may be thought of as routine in day-to-day flying.

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-23-22	Communications - AvTech Audio Control Panel Modification	560-0260 thru -0375 equipped with Collins radios	5	_____
SB560-34-61	P-1000 Phase III Avionics System Software Change	560-0260 thru -0369 and -0371 thru -0400	7	_____
SB560-34-72	Meggitt Approach Mode Approval	560-0387, -0392, and -0401 thru -0508	7	_____
SB560-34-79	RVSM Operation Modification	560-0260 thru -0525	8	_____
SB560-34-81	P-1000 Phase IV Avionics System Software Upgrade	560-0260 thru -0497, -0499, and -0501 thru -0506	8	_____
SB560-34-93	P-1000 Phase V Avionics System Software Upgrade and Autopilot Pitch Trim Installation	560-0260 thru -0538	10	_____

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of the basic FAA Approved Airplane Flight Manual. The codes indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this manual.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
AA	Airplanes 560-0260 thru -0538.
AB	Airplane 560-0370 and Airplanes 560-0401 thru -0538 not incorporating SB560-34-81 or SB560-34-93.
AC	Airplanes 560-0260 thru -0369 and -0371 thru -0400 not incorporating SB560-34-61, SB560-34-81 or SB560-34-93.
AD	Airplanes 560-0387, -0392 and -0401 thru -0538.
AE	Airplanes 560-0260 thru -0386, -0388 thru -0391 and -0393 thru -0400.
AF	Airplanes 560-0260 thru -0292 and -0294 thru -0306.
AG	Airplanes 560-0293 and -0307 thru -0538.
AH	Airplanes 560-0376 thru -0538 and -0260 thru -0375 equipped with Honeywell radios and -0260 thru -0375 equipped with Collins radios incorporating SB560-23-22.
AI	Airplanes 560-0260 thru -0375 equipped with Collins radios not incorporating SB560-23-22.
AJ	Airplanes 560-0370 and -0401 thru -0506 and Airplanes 560-0260 thru -0369 and -0371 thru -0400 incorporating SB560-34-61 and Airplanes 560-0260 thru -0506 not incorporating SB560-34-81 and Airplanes 560-0260 thru -0538 not incorporating SB560-34-93.

AIRPLANE CONFIGURATION CODES (Continued)

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
AK	Airplanes 560-0260 thru -0369 and -0371 thru -0400 not incorporating SB560-34-61, SB560-34-81 or SB560-34-93.
BC	Airplanes 560-0387, -0392, -0401 thru -0508 incorporating SB560-34-72 and -0509 thru -0538.
BD	Airplanes 560-0260 thru -0386, -0388 thru -0391, and -0393 thru -0508 not incorporating SB560-34-72.
BG	Airplanes 560-0260 thru -0525 not incorporating SB560-34-79.
BH	Airplanes 560-0260 thru -0525 incorporating SB560-34-79.
BI	Airplanes 560-0526 thru -0538.
BJ	Airplanes 560-0260 thru -0497, -0499, and -0501 thru -0506 incorporating SB560-34-81 and Airplanes 560 -0498, -0500, -0507 thru -0538 and Airplanes 560-0260 thru -0538 not incorporating SB560-34-93.
BK	Airplanes 560-0260 thru -0497, -0499 and -0501 thru -0506 not incorporating SB560-34-81 or SB560-34-93.
BL	Airplanes 560-0370 and -0401 thru -0506. Airplanes 560-0260 thru -0369 and -0371 thru -0400 incorporating SB560-34-61. Airplanes 560-0260 thru -0506 incorporating SB560-34-81 and -0507 thru -0538. Airplanes 560-0260 thru -0538 not incorporating SB560-34-93.
BN	Airplanes 560-0260 thru -0538 incorporating SB560-34-93.
BO	Airplanes 560-0260 thru -0292 and -0294 thru -0306 incorporating SB560-34-93.
BP	Airplanes 560-0293 and -0307 thru -0538 incorporating SB560-34-93.
BQ	Airplanes 560-0260 thru -0292 and -0294 thru -0306 not incorporating SB560-34-93.
BR	Airplanes 560-0293 and -0307 thru -0538 not incorporating SB560-34-93.

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OPERATING LIMITATIONS

NOTICE

CERTIFICATION AND OPERATIONAL LIMITATIONS ARE CONDITIONS OF THE TYPE AND AIRWORTHINESS CERTIFICATES AND MUST BE COMPLIED WITH AT ALL TIMES AS REQUIRED BY LAW.

CERTIFICATION STATUS

This airplane is certified in accordance with FAR 25.

WEIGHT LIMITATIONS

Maximum Design Ramp Weight	16,500 Pounds
Maximum Design Takeoff Weight	16,300 Pounds
Maximum Design Landing Weight	15,200 Pounds
Maximum Design Zero Fuel Weight	12,200 Pounds

Takeoff weight is limited by the most restrictive of the following requirements:

Maximum Certified Takeoff Weight	16,300 Pounds
Maximum Takeoff Weight Permitted by Climb Requirements	Refer to Procedures for Use of Takeoff Performance Tables in Section IV
Takeoff Field Length	Refer to Procedures for Use of Takeoff Performance Tables in Section IV

Landing weight is limited by the most restrictive of the following requirements:

Maximum Certified Landing Weight	15,200 Pounds
Maximum Landing Weight Permitted by Climb Requirements or Brake Energy Limit	Refer to Procedures for Use of Approach and Landing Performance Tables in Section IV
Landing Distance	Refer to Procedures for Use of Approach and Landing Performance Tables in Section IV

CENTER-OF-GRAVITY LIMITS

Center-of-Gravity Moment Envelope	Refer to Figure 2-1
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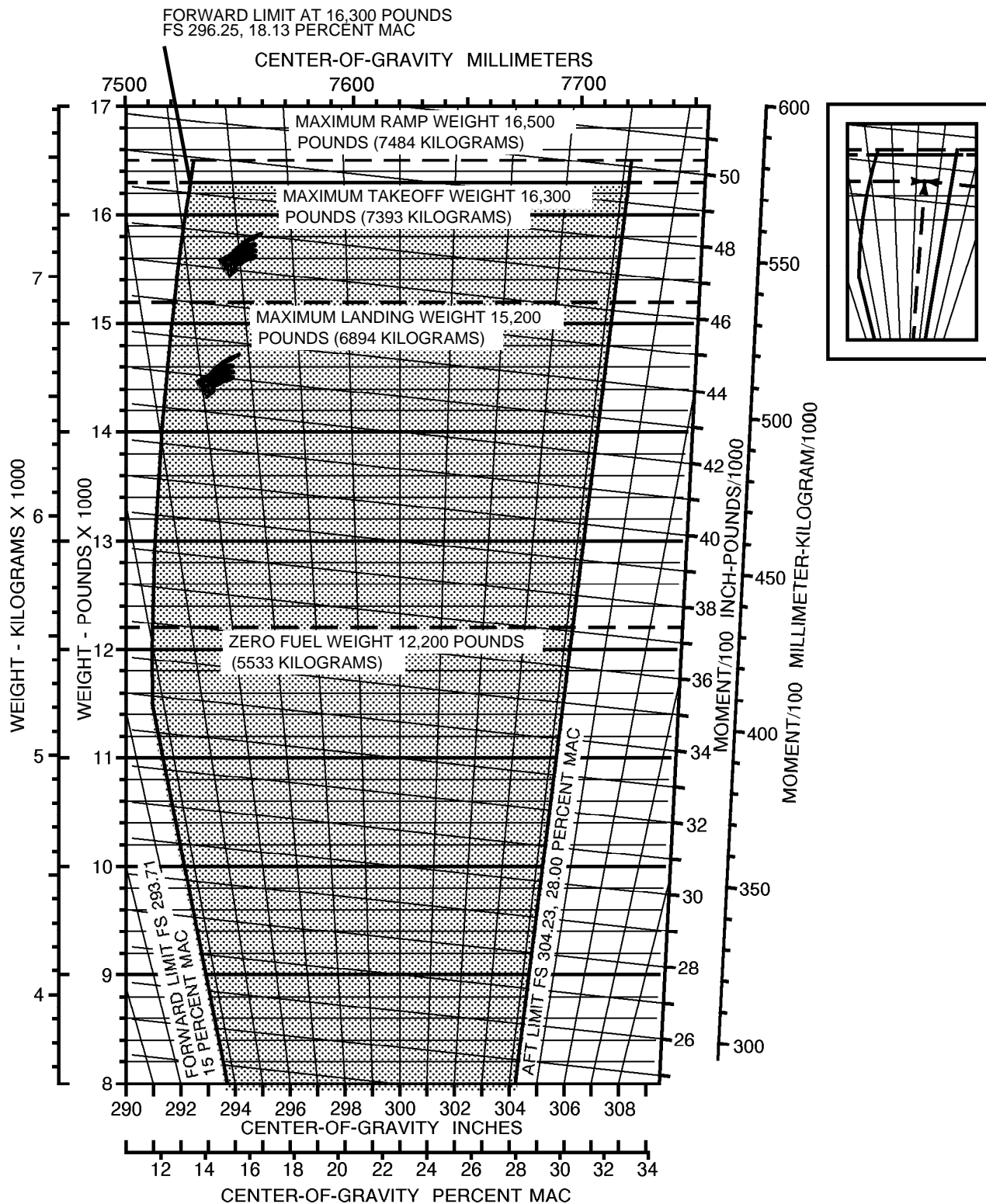
WEIGHT AND BALANCE DATA

The airplane must be operated in accordance with the approved loading schedule. (Refer to Weight and Balance Data Sheet and Model 560 Citation V Weight and Balance Manual.)

POWERPLANT LIMITATIONS

Engine Type	Pratt and Whitney Canada Inc. JT15D-5D Turbofan
Engine Operating Limits	Refer to Figure 2-2
Inter-Turbine Temperatures Limits	Refer to Figure 2-3
Engine Overspeed Limits	Refer to Figure 2-4
Takeoff/Go Around Thrust Setting	Refer to Figure 4-9
Maximum Continuous Thrust Setting	Refer to Figure 4-10

CENTER-OF-GRAVITY MOMENT ENVELOPE



FORM NUMBER 1906, 16 May 1994

Figure 2-1

ENGINE OPERATING LIMITS

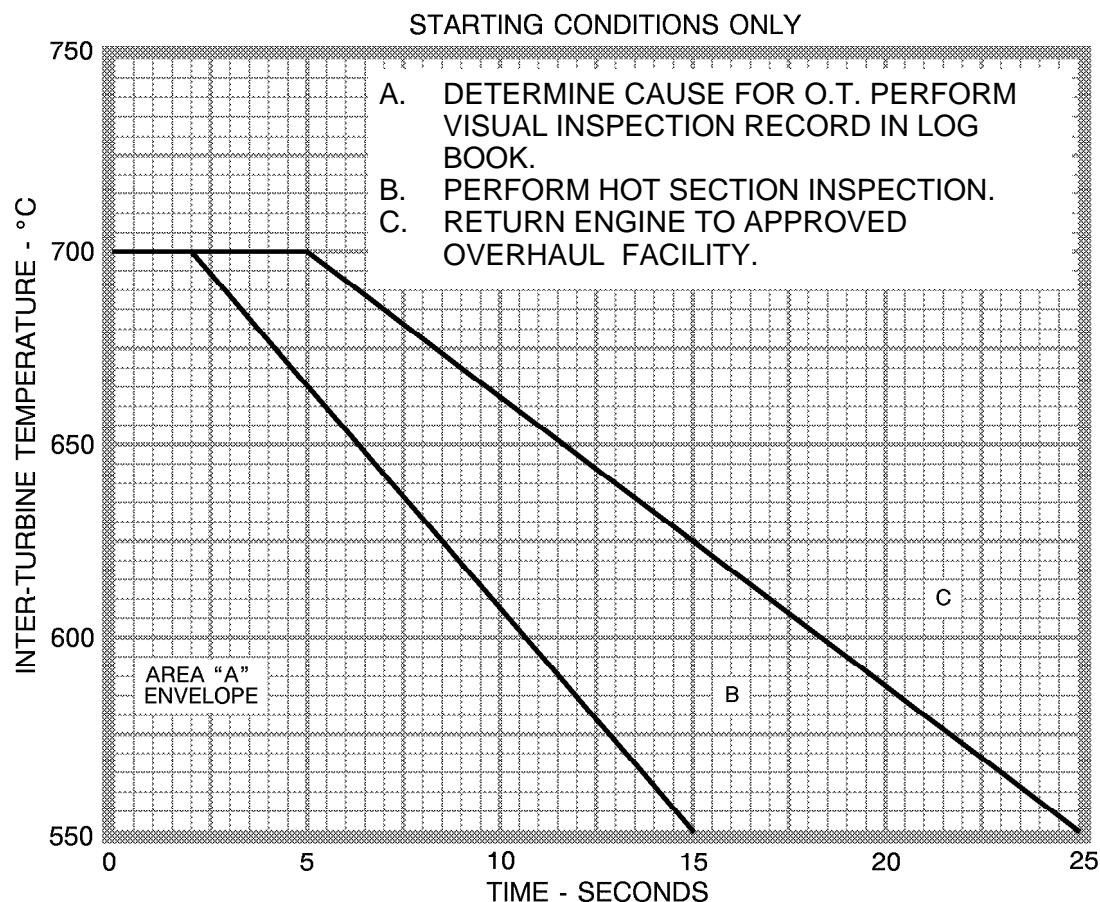
OPERATING CONDITIONS	OPERATING LIMITS					
THRUST SETTING	TIME LIMIT (MINUTES)	ITT TEMPERATURE °C	N ₂ % TURBINE RPM	N ₁ % FAN RPM	OIL PRESSURE PSIG (NOTE 2)	OIL TEMPERATURE °C
TAKEOFF	5 (NOTE 5)	720	97	100 (NOTE 4)	60 TO 90 (NOTE 3)	10 TO 121
MAXIMUM CONTINUOUS	CONTINUOUS	700	97	100 (NOTE 4)	60 TO 90	10 TO 121
FLIGHT IDLE	CONTINUOUS	580	52 (MIN)	---	40 (MIN)	-40 TO 121
GROUND IDLE	CONTINUOUS	580	46 (MIN)	---	40 (MIN)	-40 TO 121
STARTING	---	550 (NOTE 1)	---	---	---	-40 (MIN)
TRANSIENT	---	740	97	101.9	(NOTE 3)	-18 TO 129

NOTES

1. Refer to Figure 2-3.
2. Normal oil pressures are 60 to 90 PSIG above 60% TURBINE RPM. Oil pressures below 60 PSIG are undesirable and should be tolerated only for the completion of the flight, preferably at reduced power setting. Oil pressures below 40 PSIG are unsafe and require that either the engine be shut down or a landing be made as soon as possible, using the minimum power required to sustain flight.
3. The maximum transient oil pressure can be 100 PSIG for 90 seconds.
4. Refer to the appropriate thrust setting charts in Section IV (Standard Charts) for % FAN RPM setting.
5. Takeoff ratings that are normally limited to 5 minutes duration may be used for up to 10 minutes for One Engine Inoperative operations without adverse effects on engine airworthiness.

Figure 2-2

INTER-TURBINE TEMPERATURE LIMITS



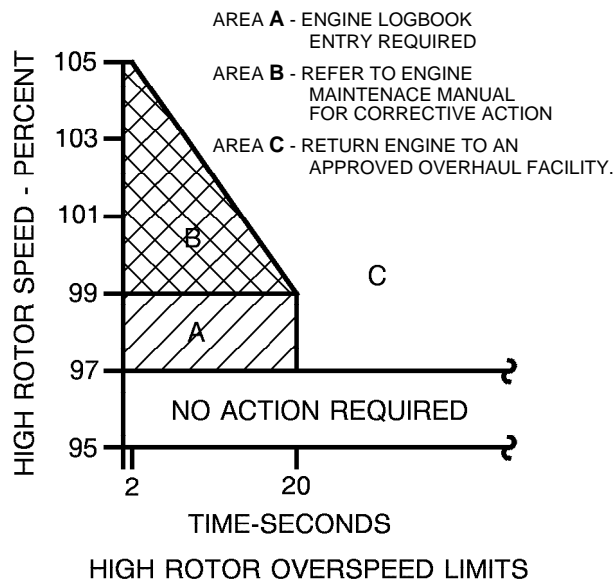
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ALL CONDITIONS EXCEPT STARTING

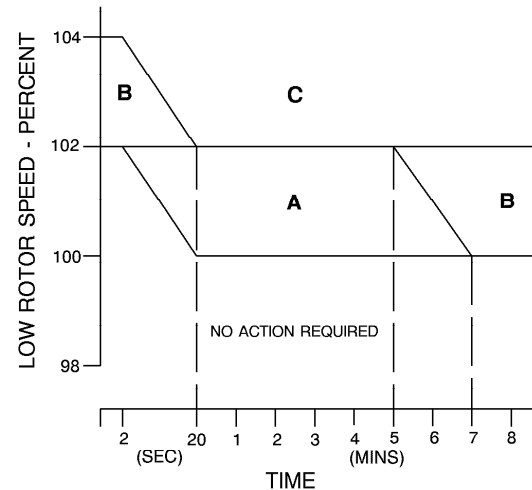
If the Inter-Turbine Temperature (ITT) exceeds 720°C during takeoff, or if 700°C is exceeded at any time other than takeoff, refer to Chapter 77 of the Maintenance Manual and Engine Maintenance Manual.

Figure 2-3

ENGINE OVERSPEED LIMITS



AREA A - REPORT INCIDENT IN LOG BOOK.
 AREA B - REMOVE LOW PRESSURE TURBINE ASSEMBLY AND RETURN TO AN APPROVED OVERHAUL FACILITY.
 AREA C - RETURN ENGINE TO AN APPROVED OVERHAUL FACILITY.



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Figure 2-4

ENGINE FAN INSPECTION

To assure accurate fan speed thrust indication, inspect the fan for damage prior to each flight.

NOTE

Refer to the exterior inspection in the Normal Procedures Section of this manual for engine duct and fan inspection.

BATTERY AND STARTER CYCLE LIMITATIONS

Starter Limitation with external power unit or generator assisted cross start as the starter power source

Two engine starts per 30 minutes. Two cycles of operation with a 90-second rest period between cycles is permitted.

Starter Limitation with battery as a power source

Three engine starts per 30 minutes. Three cycles of operation with a 90-second rest period between cycles is permitted.

Battery Limitation

Three engine starts per hour. Refer to notes 2 and 3.

NOTE

1. If battery limitation is exceeded, a deep cycle including a capacity check must be accomplished to detect possible cell damage. Refer to Chapter 24 of the Maintenance Manual for procedure.
2. Three generator assisted cross starts are equal to one battery start.

(Continued Next Page)

BATTERY AND STARTER CYCLE LIMITATIONS (Continued)**NOTE**

3. If an external power unit is used for start, no battery cycle is counted.
4. Use of an external power source with voltage in excess of 28 VDC or current in excess of 1000 amps may damage the starter.

PROLONGED GROUND OPERATION

Continuous engine ground static operation up to and including five minutes at takeoff thrust is limited to ambient temperatures not to exceed 39°C above ISA. (Refer to Figure 4-8).

Continuous ground operation of the starter-generator above 125 amperes at ground idle 46% turbine speed or 225 amperes at flight idle 52% turbine speed is prohibited.

Limit ground operation of pitot/static heat to two minutes to preclude damage to the pitot static tubes and angle-of-attack probe.

WINDSHIELD ICE PROTECTION FLUID

Use TT-I-735 isopropyl alcohol for windshield anti-ice.

HYDRAULIC FLUID

Use Skydrol 500A, B, B-4, C, or LD-4; or Hyjet, Hyjet W, III, IV, IVA or IVA Plus only.

APPROVED OILS

The following oils are approved for use:

MOBIL JET OIL II	EXXON TURBO OIL 2380	AEROSHELL TURBINE OIL 500
MOBIL JET OIL 254	CASTROL 5000	AEROSHELL TURBINE OIL 560
	ROYCO TURBINE OIL 560	ROYCO TURBINE OIL 500

In addition, oils listed for the engine in the latest revision to Pratt and Whitney Canada Inc. Service Bulletin Number 7001 are approved.

CAUTION

WHEN CHANGING FROM AN EXISTING LUBRICANT FORMULATION TO A "THIRD GENERATION" LUBRICANT FORMULATION (AEROSHELL TURBINE OIL 560 OR MOBIL JET 254), THE ENGINE MANUFACTURER STRONGLY RECOMMENDS THAT SUCH A CHANGE SHOULD ONLY BE MADE WHEN AN ENGINE IS NEW OR FRESHLY OVERHAULED. FOR ADDITIONAL INFORMATION ON USE OF THIRD GENERATION OILS, REFER TO ENGINE MANUFACTURER'S PERTINENT OIL SERVICE BULLETINS.

Should it be necessary to replenish oil consumption losses when oil of the same brand (as tank contents) is unavailable, then the following requirements apply:

(Continued Next Page)

APPROVED OILS (Continued)

For contingency purposes, oil replenishment using any other approved oil brand listed is acceptable provided:

1. The total quantity of added oil does not exceed two U.S. quarts in any 400-hour period.
2. If it is required to add more than two U.S. quarts of dissimilar oil brands, drain and flush complete oil system and refill with an approved oil in accordance with Engine Maintenance Manual instructions.

Should oils of nonapproved brands or of different viscosities become intermixed, drain and flush complete oil system and refill with an approved oil in accordance with Engine Maintenance Manual instructions.

Minimum oil temperature for starting is -40°C .

SINGLE POINT REFUELING LIMITATION (if equipped)

Single point refueling operations must be accomplished per the procedures contained on the placard installed on the single point refueling access door. Refueling pressure range is 15 to 60 PSI, maximum defueling pressure is -6 PSI.

FUEL LIMITATIONS

Anti-icing additive must be added to all approved fuels not presently containing the additive.

*Boost Pumps - ON; when low fuel lights illuminate or at 185 pounds or less indicated fuel.

The following fuels are approved for use in accordance with Figure 2-5.

COMMERCIAL KEROSENE JET A, JET A-1, JET A-2, JET B, JP-4, JP-5 and JP-8 per CPW 204 specification.

AVIATION GASOLINE, MIL-G-5572, all grades, permitted for a maximum of 50 hours or 3500 gallons between overhauls providing:

1. Pilot confirms fuel temperature within limits.
2. Maximum ambient air temperature (takeoff) $+32^{\circ}\text{C}$.
- *3. Boost Pumps - ON.
4. Hours used entered in Engine Logbook. For record keeping purposes, assume one hour of engine operation equals 70 gallons of gasoline.

CAUTION

THESE FUELS, EXCEPT MILITARY JP-4, JP-5 and JP-8, REQUIRE THE ADDITION OF ANTI-ICING ADDITIVE (PER MIL-I-27686 OR MIL-I-85470). REFER TO SECTION III, NORMAL PROCEDURES, FUEL ANTI-ICE ADDITIVES, FOR PROCEDURES TO FOLLOW WHEN BLENDING AND CHECKING FUEL ANTI-ICE ADDITIVES.

*To crossfeed, turn boost pump OFF on side opposite selected tank.

FUEL LIMITATIONS AND ADJUSTMENTS

FUEL GRADE	FUEL SPECIFICATION	MINIMUM FUEL TEMPERATURE (TAKEOFF)	MAXIMUM FUEL TEMPERATURE (TAKEOFF)	MAXIMUM ALTITUDE	FUEL CONTROL DENSITY ADJUSTMENT FOR OPTIMUM ENGINE ACCELERATION
JET A	ASTM-D1655	-35°C	+50°C	45,000 FEET	0.81
JET A-1	ASTM-D1655	-40°C	+50°C	45,000 FEET	0.81
JET B	ASTM-D1655	-45°C	+50°C	45,000 FEET	0.79
JP-4	MIL-T-5624	-54°C	+50°C	45,000 FEET	0.79
JP-5	MIL-T-5624	-40°C	+50°C	45,000 FEET	0.81
JP-8	MIL-T-83133	-40°C	+50°C	45,000 FEET	0.81
AVIATION GASOLINE	MIL-G-5572 ASTM-D910	-54°C	+32°C	18,000 FEET	0.73

Maximum Asymmetrical Fuel Differential for Normal Operations 200 Pounds
 Maximum Emergency Asymmetrical Fuel Differential 600 Pounds

NOTE

Flight characteristics requirements were not demonstrated with unbalanced fuel above 200 pounds. A lateral fuel imbalance of 600 pounds has been demonstrated for emergency return.

Figure 2-5

UNUSABLE FUEL

Fuel remaining in the fuel tanks when the fuel quantity indicator reads zero is not usable in flight.

SPEED LIMITATIONS

Maximum Operating Limit Speeds

M_{MO} (Above 28,907 Feet) 0.755 Mach (Indicated)
 V_{MO} (Between 8000 and 28,907 Feet) 292 KIAS
 V_{MO} (Below 8000 Feet) 262 KIAS

The maximum operating limit speeds may not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training.

Maximum Maneuvering Speeds - V_A Refer to Figure 2-6

Full application of rudder and aileron controls as well as maneuvers that involve angles-of-attack near the stall should be confined to speeds below maximum maneuvering speed.

(Continued Next Page)

Maximum Flap Extended Speed - V _{FE}	
Full Flaps - LAND Position (35°)	173 KIAS
Partial Flaps - T.O. (7°), T.O. & APPR Position (15°)	200 KIAS
Maximum Landing Gear Extended Speed - V _{LE}	292 KIAS
Maximum Landing Gear Operating Speed - V _{LO} (Extending)	250 KIAS
- V _{LO} (Retracting)	200 KIAS
Maximum Speed Brake Operation Speed - V _{SB}	No Limit
Minimum Control Speeds (V _{MCA} and V _{MCG})	Refer to Section IV, Performance General
Autopilot Operation	292 KIAS or 0.755 MACH

Maximum Altitude Limit	14,000 Feet
Maximum Tailwind Components	10 Knots
Maximum Water/Slush on Runway	0.5 Inches
Maximum Ambient Temperature	ISA +39°C (Refer to Figures 2-7 and 4-8)
Minimum Ambient Temperature	-54°C

Goodyear part number 184F08-1 or 184F13-5 and part number 031-613-8 (manufactured by BFGoodrich/Michelin) are the only nose tires approved. The nose tire must be inflated to 120±5 PSI.

Vertical navigation system must be OFF below 500 feet AGL.

Takeoffs and landings are limited to paved runways unless equipped with optional Gravel Runway Modification, either factory installed or through incorporation of SB560-32-03.

The nosewheel must be in firm contact with the ground prior to extending speed brakes and/or deploying thrust reversers.

When any residual ice is present or can be expected during approach and landing, V_{REF} and V_{APP} must be increased. V_{REF} and V_{APP} , the landing distance, and the maximum landing weight permitted by brake energy must be corrected per Figure 4-32 (refer to Section IV, Performance - Approach and Landing). Engine anti-ice must be on to maintain adequate stall warning margin.

Maximum Operating Altitude	45,000 Feet
Maximum Ambient Temperature	Refer to Figure 2-7
Minimum Ambient Temperature	Refer to Figure 2-7
Generator Load	300 Amperes

This airplane is approved for day and night, VFR, IFR flight and flight into known icing conditions.

MAXIMUM MANEUVERING SPEEDS

EXAMPLE:

Pressure Altitude - 25,000 FEET

Weight - 14,500 POUNDS

Maximum Maneuvering Speed - 202 KNOTS

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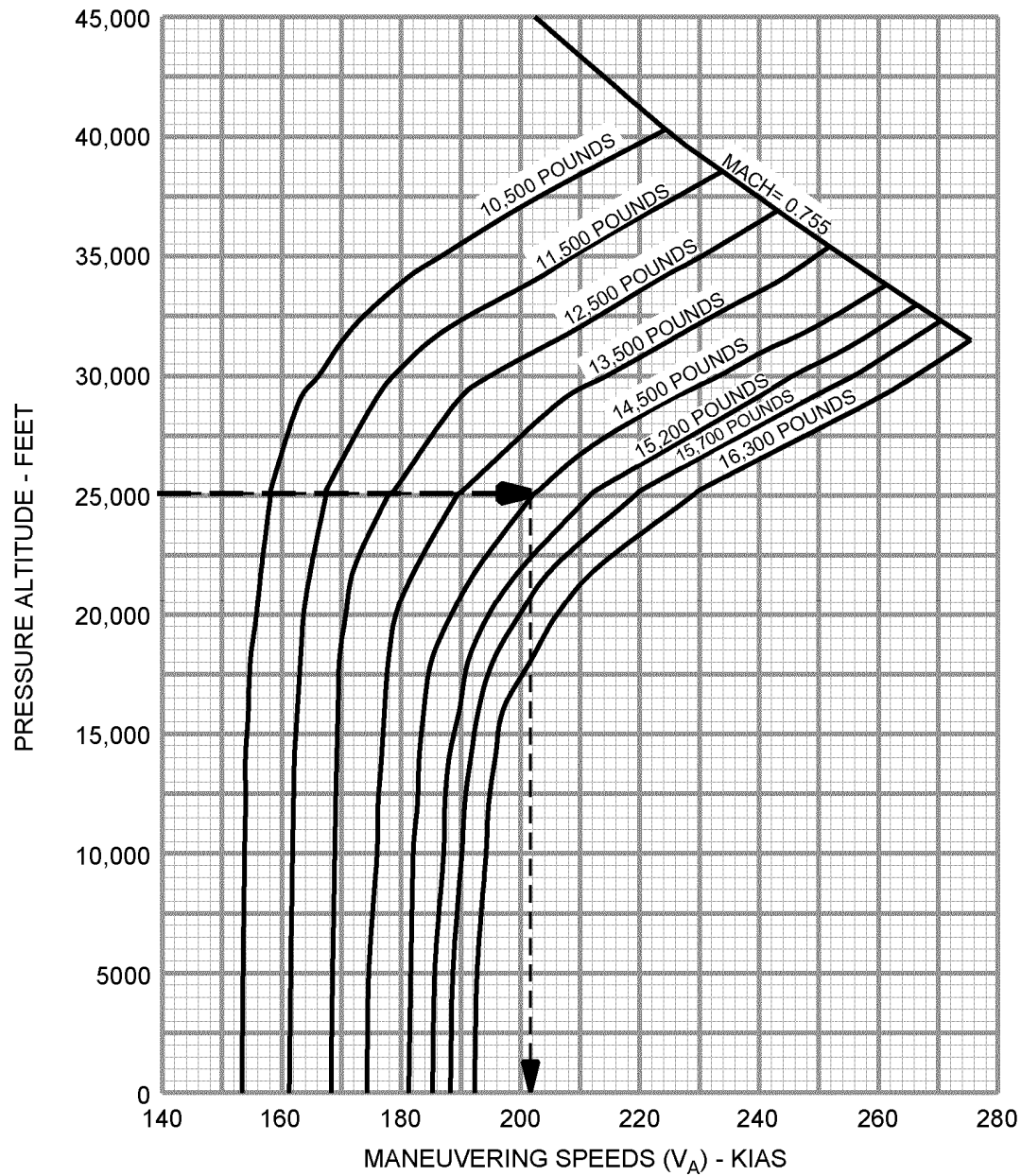
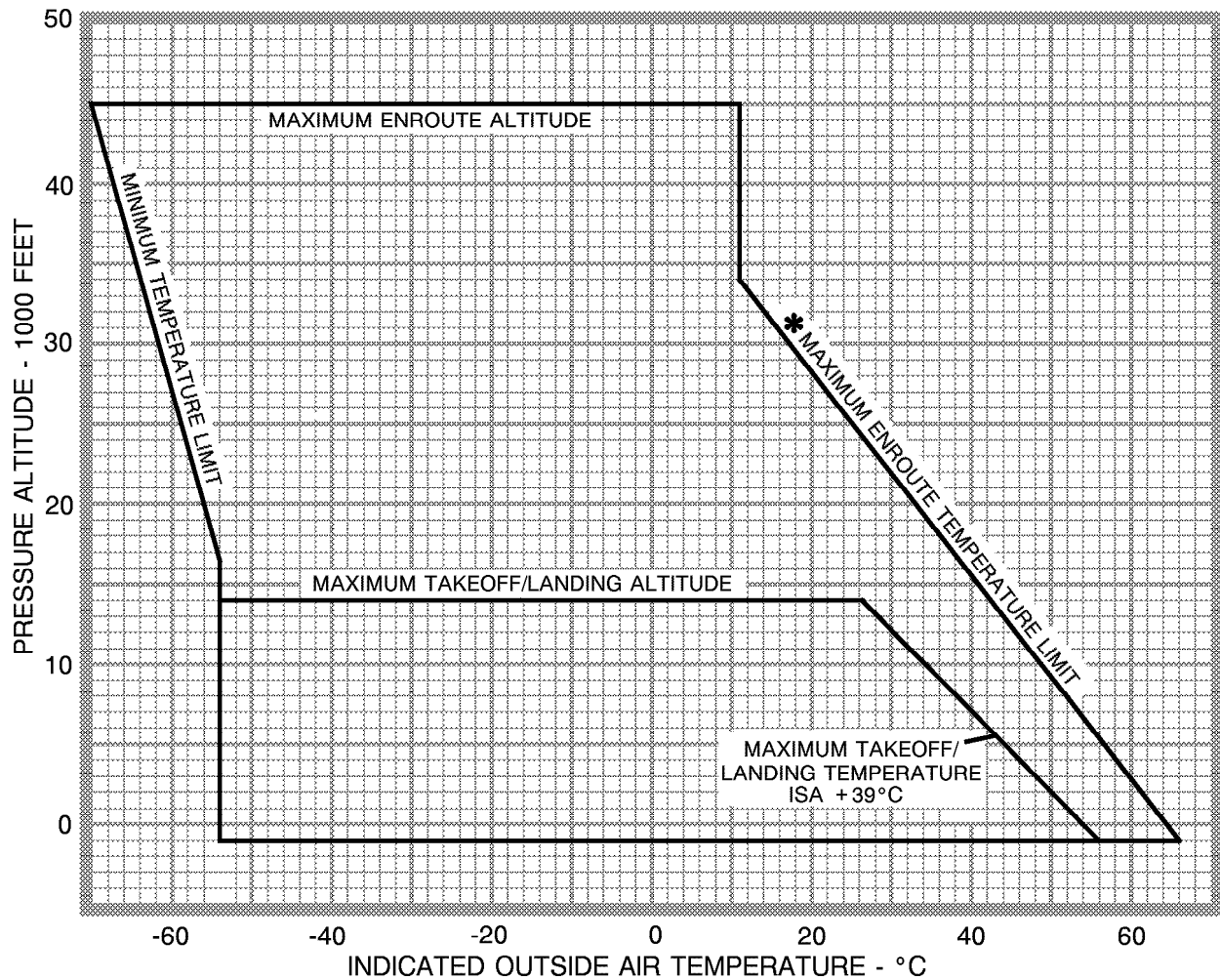


Figure 2-6

TAKEOFF/LANDING/ENROUTE TEMPERATURE LIMITATIONS



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- * Maximum Enroute Operating Temperature Limit is ISA +39°C ambient temperature adjusted for Ram Rise (refer to Figure 4-3 and 4-8) or the Indicated Outside Air Temperature from the above graph, whichever is less.

Figure 2-7

MINIMUM CREW

Minimum Flight Crew for All Operations 1 Pilot and 1 Copilot

LOAD FACTOR

In Flight

Flaps UP Position (0°) -1.44 to +3.6G at 16,300 Pounds
 Flaps T.O., T.O. & APPR to LAND Position
 (7° To 35°) 0.0 to +2.0G at 16,300 Pounds

These accelerations limit the angle-of-bank in turns and limit the severity of pull-up maneuvers.

Landing

Flaps - T.O. & APPR to LAND Position
 (15° to 35°) +3.5G at 15,200 Pounds

CABIN PRESSURIZATION LIMITATIONS

Normal Cabin Pressurization Limitations 0.0 to 8.9 PSI, +0.1 or -0.1 PSI Differential

MANEUVERS

No acrobatic maneuvers, including spins, are approved. No intentional stalls permitted above 25,000 feet.

PASSENGER SEATS

The maximum number of seats is 13 (pilot, copilot, and 11 passengers). For all takeoffs and landings, seats must be fully upright and outboard, and the seat just aft of the emergency exit must be to the most aft position (toward rear of airplane). Passenger seat belts and shoulder harnesses must be fastened.

AVTECH AUDIO CONTROL PANEL (with Collins radios)

Operation of the audio panel in the passenger speaker (PASS SPKR) mode is limited to required passenger briefings or emergencies.

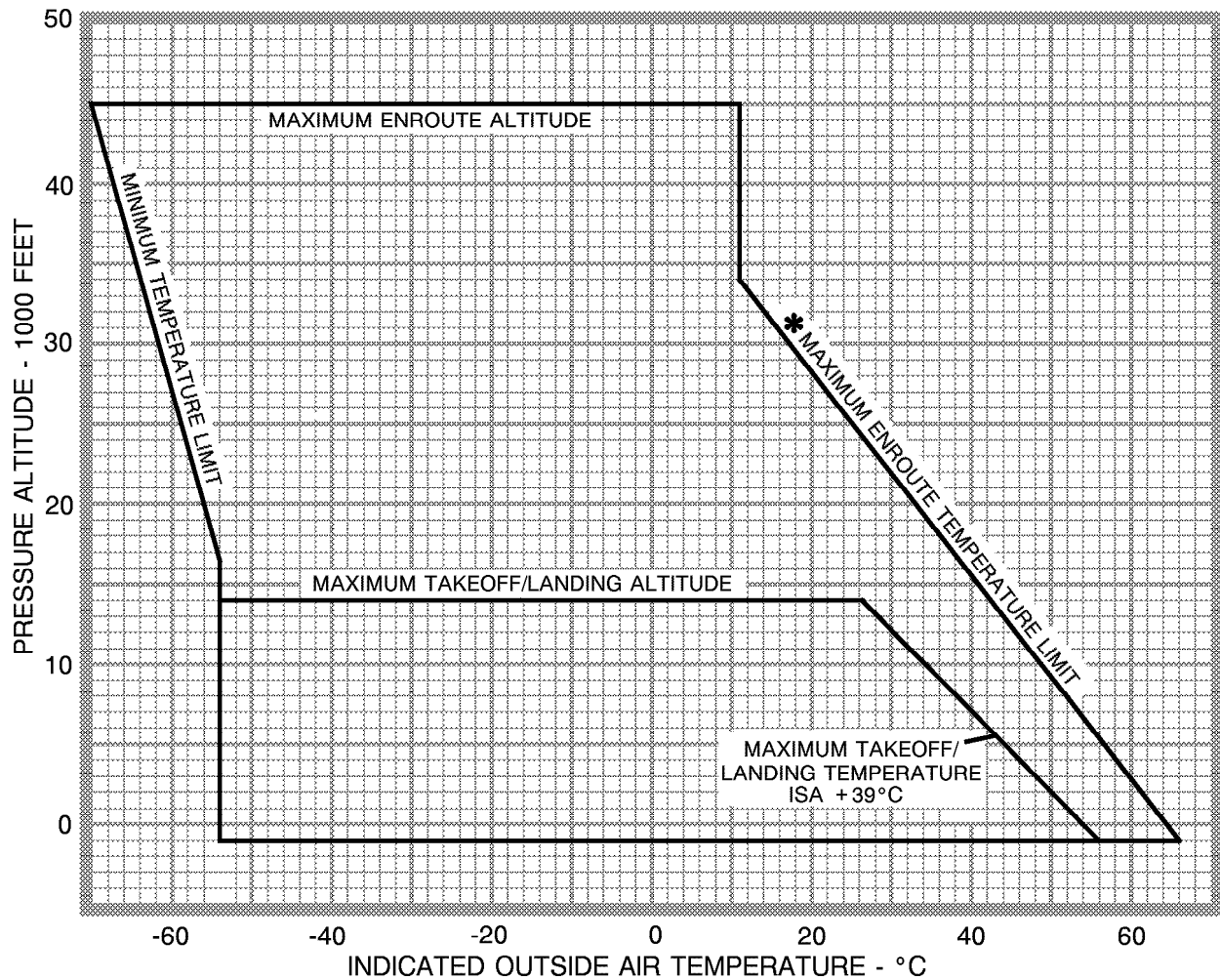
NOTE

- The same side cockpit speaker is normally muted when PASS SPKR is selected. All incoming transmissions and auxiliary audio warnings (GPWS and TCAS, if installed) will be received through the opposite side speaker. If both audio control switches are selected to PASS SPKR, both cockpit speakers become muted. Avoid selecting both switches to PASS SPKR at the same time.
- With passenger speaker mode selected and microphone selector switch selected to oxygen mask, the cockpit speaker will not receive voice interphone communications from the oxygen mask microphone of the opposite side pilot.
- Headset audio is not affected when (PASS SPKR) mode is selected.

AIRPLANE BATTERY

If the BATT O'TEMP light illuminates during ground operation, do not take off until after the proper maintenance procedures have been accomplished.

TAKEOFF/LANDING/ENROUTE TEMPERATURE LIMITATIONS



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- * Maximum Enroute Operating Temperature Limit is ISA +39°C ambient temperature adjusted for Ram Rise (refer to Figure 4-3 and 4-8) or the Indicated Outside Air Temperature from the above graph, whichever is less.

Figure 2-7

MINIMUM CREW

Minimum Flight Crew for All Operations 1 Pilot and 1 Copilot

LOAD FACTOR

In Flight

Flaps UP Position (0°) -1.44 to +3.6G at 16,300 Pounds
 Flaps T.O., T.O. & APPR to LAND Position
 (7° To 35°) 0.0 to +2.0G at 16,300 Pounds

These accelerations limit the angle-of-bank in turns and limit the severity of pull-up maneuvers.

Landing

Flaps - T.O. & APPR to LAND Position
 (15° to 35°) +3.5G at 15,200 Pounds

CABIN PRESSURIZATION LIMITATIONS

Normal Cabin Pressurization Limitations 0.0 to 8.9 PSI, +0.1 or -0.1 PSI Differential

MANEUVERS

No acrobatic maneuvers, including spins, are approved. No intentional stalls permitted above 25,000 feet.

PASSENGER SEATS

The maximum number of seats is 13 (pilot, copilot, and 11 passengers). For all takeoffs and landings, seats must be fully upright and outboard, and the seat just aft of the emergency exit must be to the most aft position (toward rear of airplane). Passenger seat belts and shoulder harnesses must be fastened.

AVTECH AUDIO CONTROL PANEL (with Collins radios)

Operation of the audio panel in the passenger speaker (PASS SPKR) mode is limited to required passenger briefings or emergencies.

NOTE

- Depending on the modification level of the audio panel installed, all incoming transmissions and auxiliary audio warnings (GPWS and TCAS if installed) to both cockpit speakers may be lost if either audio panel has passenger speaker mode selected.
- With passenger speaker mode selected and microphone selector switch selected to oxygen mask, the cockpit speaker will not receive voice interphone communications from the oxygen mask microphone of the opposite side pilot.
- Headset audio is not affected when (PASS SPKR) mode is selected.

AIRPLANE BATTERY

If the BATT O'TEMP light illuminates during ground operation, do not take off until after the proper maintenance procedures have been accomplished.

ANGLE-OF-ATTACK/STICK SHAKER SYSTEM

The angle-of-attack and stall warning system must be operable and a satisfactory pre-flight must be performed in accordance with Section III, Normal Procedures.

The angle-of-attack indicating system may be used as a reference system but does not replace the airspeed display in the PFD as a primary instrument.

The angle-of-attack system can be used as a reference for approach speed ($1.3 V_{S1}$) at all airplane weights and center-of-gravity locations at zero, takeoff, takeoff/approach and landing flap positions.

If the stick shaker does not operate during the warning system test, or the angle-of-attack system is otherwise inoperative, it must be repaired before flight, except when the airplane is operated in accordance with an approved Minimum Equipment List.

INSTRUMENT MARKINGS

Left and Right Oil Pressure Indicators	Red Line - 40 PSI Yellow Band - 40 to 60 PSI Green Band - 60 to 90 PSI
Left and Right Turbine RPM Indicators	Flashing Red Light, Steady Digital Readout - 97% RPM Normal Operating - 46 to 97% RPM
Left and Right Oil Temperature Indicators	Red Line - 121°C Green Band - 0 to 121°C
Airspeed Indicator	Red Bands - 262 KIAS - 292 KIAS - 0.755 Mach
Left and Right Inter-Turbine Temperature Indicators	Red Line - 720°C Yellow Band - 700 to 720°C Red Triangle - 550°C Green Band - 150 to 700°C
Left and Right Fan RPM Indicators (Refer to Section IV for thrust setting limits)	Red Line - 100.0% Green Band - 25 to 100.0%
Left and Right Ammeter Indicators	Red Line - 300 Amps
Cabin Differential Pressure Indicator	Red Line - 8.9 PSI Green Arc - 0.0 to 8.9 PSI
Oxygen Pressure Indicator	Red Line - 2000 PSI Yellow Arc - 0.0 to 400 PSI Green Arc - 1600 to 1800 PSI
Brake and Gear Pneumatic Pressure Indicator (In Nose Compartment)	Wide Red Arc - Above 2050 PSI Narrow Red Arc - 0.0 to 1600 PSI Yellow Arc - 1600 to 1800 PSI Wide Green Arc - 1800 to 2050 PSI
Brake Hydraulic Accumulator Pressure Indicator	Light Green Arc - Static Pressure Dark Green Arc - Pressurized Pressure

AUTOPILOT

1. One pilot must remain in his seat with the seat belt fastened during all autopilot operations.
2. Autopilot operation is prohibited if any comparison monitor annunciator illuminates inflight.
3. Minimum use height: 1000 Feet AGL - Enroute
300 Feet AGL - Non-precision Approach
180 Feet AGL - Category I ILS Approach
4. Use of autopilot during Category II ILS operations is prohibited.

HONEYWELL PRIMUS 1000 FLIGHT GUIDANCE SYSTEM

1. The Honeywell, Primus 1000 Integrated Avionics System for the Citation Ultra Pilot's Manual must be immediately available to the flight crew (Honeywell publication number A28-1146-099 Revision 1, dated May 1996 or later appropriate revision).
2. Only Flight Director Category II operations are approved. Equipment operation shall be in accordance with the Category II manual.
3. The marker beacon audio muting shall not be activated at the middle marker on a Category II approach. If it is activated, the inner marker audio would still be muted because of the short time between markers.
4. Category II approaches shall be made in the following configuration only:
 - a. Flaps - Land
 - b. Gear - Down
 - c. Both engines operating
 - d. Airspeed - V_{REF}
5. EFIS ground operation with the pilot's NOSE AVN FAN FAIL annunciator light illuminated is limited to 30 minutes or until either PFD HOT or MFD HOT annunciator light illuminates, whichever occurs first.
6. Dispatch in instrument meteorological conditions is prohibited with the NOSE AVN FAN FAIL annunciator light illuminated. Dispatch in visual meteorological conditions is allowed with the AVN FAN annunciator illuminated, provided the NOSE AVN FAN FAIL ILLUMINATED ON GROUND abnormal procedures are followed.
7. Dispatch is prohibited if either the PFD HOT, MFD HOT or IC HOT annunciator light is illuminated.
8. Dispatch is prohibited following a flight where either a PFD HOT, MFD HOT or IC HOT annunciator light was illuminated, until the condition is identified and corrected.
9. The pilot's and copilot's PFDs must be installed and operational in the normal (non-reversionary) mode for takeoff.
10. The P-1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
11. Dual PFD SG reversion to the MFD is prohibited.

ANGLE-OF-ATTACK/STICK SHAKER SYSTEM

The angle-of-attack and stall warning system must be operable and a satisfactory pre-flight must be performed in accordance with Section III, Normal Procedures.

The angle-of-attack indicating system may be used as a reference system but does not replace the airspeed display in the PFD as a primary instrument.

The angle-of-attack system can be used as a reference for approach speed ($1.3 V_{S1}$) at all airplane weights and center-of-gravity locations at zero, takeoff, takeoff/approach and landing flap positions.

If the stick shaker does not operate during the warning system test, or the angle-of-attack system is otherwise inoperative, it must be repaired before flight, except when the airplane is operated in accordance with an approved Minimum Equipment List.

INSTRUMENT MARKINGS

Left and Right Oil Pressure Indicators	Red Line - 40 PSI Yellow Band - 40 to 60 PSI Green Band - 60 to 90 PSI
Left and Right Turbine RPM Indicators	Flashing Red Light, Steady Digital Readout - 97% RPM Normal Operating - 46 to 97% RPM
Left and Right Oil Temperature Indicators	Red Line - 121°C Green Band - 0 to 121°C
Airspeed Indicator	Red Bands - 262 KIAS - 292 KIAS - 0.755 Mach
Left and Right Inter-Turbine Temperature Indicators	Red Line - 720°C Yellow Band - 700 to 720°C Red Triangle - 550°C Green Band - 150 to 700°C
Left and Right Fan RPM Indicators (Refer to Section IV for thrust setting limits)	Red Line - 100.0% Green Band - 25 to 100.0%
Left and Right Ammeter Indicators	Red Line - 300 Amps
Cabin Differential Pressure Indicator	Red Line - 8.9 PSI Green Arc - 0.0 to 8.9 PSI
Oxygen Pressure Indicator	Red Line - 2000 PSI Yellow Arc - 0.0 to 400 PSI Green Arc - 1600 to 1800 PSI
Brake and Gear Pneumatic Pressure Indicator (In Nose Compartment)	Wide Red Arc - Above 2050 PSI Narrow Red Arc - 0.0 to 1600 PSI Yellow Arc - 1600 to 1800 PSI Wide Green Arc - 1800 to 2050 PSI
Brake Hydraulic Accumulator Pressure Indicator	Light Green Arc - Static Pressure Dark Green Arc - Pressurized Pressure

AUTOPILOT

1. One pilot must remain in his seat with the seat belt fastened during all autopilot operations.
2. Autopilot operation is prohibited if any comparison monitor annunciator illuminates inflight.
3. Minimum use height: 1000 Feet AGL - Enroute
300 Feet AGL - Non-precision Approach
180 Feet AGL - Category I ILS Approach.
4. Use of autopilot during Category II ILS operations is prohibited.

HONEYWELL PRIMUS 1000 FLIGHT GUIDANCE SYSTEM

1. The Honeywell Primus 1000 Integrated Avionics System for the Citation Ultra Pilot's Manual must be immediately available to the flight crew (Honeywell publication number A28-1146-099 Revision 1, dated May 1996 or later appropriate revision).
2. Only Flight Director Category II operations are approved. Equipment operation shall be in accordance with the Category II manual.

NOTE

Crew qualification is required to conduct Category II approaches.

3. The marker beacon audio muting shall not be activated at the middle marker on a Category II approach. If it is activated, the inner marker audio may also be muted because of the short time between the two markers.
4. Category II approaches shall be made in the following configuration only:
 - a. Flaps - Land
 - b. Landing Gear - Down
 - c. Both engines operating
 - d. Airspeed - $V_{REF} + 5$ KIAS

NOTE

The landing distance and maximum landing weight permitted by brake energy limits must be corrected per Figure 4-34 (refer to Section IV, Performance, APPROACH AND LANDING).

5. EFIS ground operation with the pilot's NOSE AVN FAN FAIL annunciator light illuminated is limited to 30 minutes or until either PFD HOT or MFD HOT annunciator light illuminates, whichever occurs first.
6. Dispatch in instrument meteorological conditions is prohibited with the NOSE AVN FAN FAIL annunciator light illuminated. Dispatch in visual meteorological conditions is allowed with the AVN FAN annunciator illuminated, provided the NOSE AVN FAN FAIL ILLUMINATED ON GROUND abnormal procedures are followed.
7. Dispatch is prohibited if either the PFD HOT, MFD HOT or IC HOT annunciator light is illuminated.
8. Dispatch is prohibited following a flight where either a PFD HOT, MFD HOT or IC HOT annunciator light was illuminated, until the condition is identified and corrected.
9. The pilot's and copilot's PFDs must be installed and operational in the normal (non-reversionary) mode for takeoff.
10. The P-1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
11. Dual PFD SG reversion to the MFD is prohibited.

ANGLE-OF-ATTACK/STICK SHAKER SYSTEM

The angle-of-attack and stall warning system must be operable and a satisfactory pre-flight must be performed in accordance with Section III, Normal Procedures.

The angle-of-attack indicating system may be used as a reference system but does not replace the airspeed display in the PFD as a primary instrument.

The angle-of-attack system can be used as a reference for approach speed ($1.3 V_{S1}$) at all airplane weights and center-of-gravity locations at zero, takeoff, takeoff/approach and landing flap positions.

If the stick shaker does not operate during the warning system test, or the angle-of-attack system is otherwise inoperative, it must be repaired before flight, except when the airplane is operated in accordance with an approved Minimum Equipment List.

INSTRUMENT MARKINGS

Left and Right Oil Pressure Indicators	Red Line - 40 PSI Yellow Band - 40 to 60 PSI Green Band - 60 to 90 PSI
Left and Right Turbine RPM Indicators	Flashing Red Light, Steady Digital Readout - 97% RPM Normal Operating - 46 to 97% RPM
Left and Right Oil Temperature Indicators	Red Line - 121°C Green Band - 0 to 121°C
Airspeed Indicator	Red Bands - 262 KIAS - 292 KIAS - 0.755 Mach
Left and Right Inter-Turbine Temperature Indicators	Red Line - 720°C Yellow Band - 700 to 720°C Red Triangle - 550°C Green Band - 150 to 700°C
Left and Right Fan RPM Indicators (Refer to Section IV for thrust setting limits)	Red Line - 100.0% Green Band - 25 to 100.0%
Left and Right Ammeter Indicators	Red Line - 300 Amps
Cabin Differential Pressure Indicator	Red Line - 8.9 PSI Green Arc - 0.0 to 8.9 PSI
Oxygen Pressure Indicator	Red Line - 2000 PSI Yellow Arc - 0.0 to 400 PSI Green Arc - 1600 to 1800 PSI
Brake and Gear Pneumatic Pressure Indicator (In Nose Compartment)	Wide Red Arc - Above 2050 PSI Narrow Red Arc - 0.0 to 1600 PSI Yellow Arc - 1600 to 1800 PSI Wide Green Arc - 1800 to 2050 PSI
Brake Hydraulic Accumulator Pressure Indicator	Light Green Arc - Static Pressure Dark Green Arc - Pressurized Pressure

AUTOPILOT

1. One pilot must remain in his seat with the seat belt fastened during all autopilot operations.
2. Autopilot operation is prohibited if any comparison monitor annunciator illuminates in flight.
3. Minimum use height: 1000 Feet AGL - Enroute
300 Feet AGL - Non-precision Approach
180 Feet AGL - Category I ILS Approach.

HONEYWELL PRIMUS 1000 FLIGHT GUIDANCE SYSTEM

1. The Honeywell Primus 1000 Integrated Avionics System for the Citation Ultra Pilot's Manual must be immediately available to the flight crew (Honeywell publication number A28-1146-099 Revision 3, or later appropriate revision).
2. Category II approaches are not approved.
3. EFIS ground operation with the pilot's NOSE AVN FAN FAIL annunciator light illuminated is limited to 30 minutes or until either PFD HOT or MFD HOT annunciator light illuminates, whichever occurs first.
4. Dispatch in instrument meteorological conditions is prohibited with the NOSE AVN FAN FAIL annunciator light illuminated. Dispatch in visual meteorological conditions is allowed with the AVN FAN annunciator illuminated, provided the NOSE AVN FAN FAIL ILLUMINATED ON GROUND abnormal procedures are followed.
5. Dispatch is prohibited if either the PFD HOT, MFD HOT or IC HOT annunciator light is illuminated.
6. Dispatch is prohibited following a flight where either a PFD HOT, MFD HOT or IC HOT annunciator light was illuminated, until the condition is identified and corrected.
7. The pilot's and copilot's PFDs must be installed and operational in the normal (non-reversionary) mode for takeoff.
8. The P-1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
9. Dual PFD SG reversion to the MFD is prohibited.
10. VOR approaches without a valid co-located DME signal are prohibited with autopilot coupled or with flight director only.

ANGLE-OF-ATTACK/STICK SHAKER SYSTEM

The angle-of-attack and stall warning system must be operable and a satisfactory pre-flight must be performed in accordance with Section III, Normal Procedures.

The angle-of-attack indicating system may be used as a reference system but does not replace the airspeed display in the PFD as a primary instrument.

The angle-of-attack system can be used as a reference for approach speed ($1.3 V_{S1}$) at all airplane weights and center-of-gravity locations at zero, takeoff, takeoff/approach and landing flap positions.

If the stick shaker does not operate during the warning system test, or the angle-of-attack system is otherwise inoperative, it must be repaired before flight, except when the airplane is operated in accordance with an approved Minimum Equipment List.

INSTRUMENT MARKINGS

Left and Right Oil Pressure Indicators	Red Line - 40 PSI Yellow Band - 40 to 60 PSI Green Band - 60 to 90 PSI
Left and Right Turbine RPM Indicators	Flashing Red Light, Steady Digital Readout - 97% RPM Normal Operating - 46 to 97% RPM
Left and Right Oil Temperature Indicators	Red Line - 121°C Green Band - 0 to 121°C
Airspeed Indicator	Red Bands - 262 KIAS - 292 KIAS - 0.755 Mach
Left and Right Inter-Turbine Temperature Indicators	Red Line - 720°C Yellow Band - 700 to 720°C Red Triangle - 550°C Green Band - 150 to 700°C
Left and Right Fan RPM Indicators (Refer to Section IV for thrust setting limits)	Red Line - 100.0% Green Band - 25 to 100.0%
Left and Right Ammeter Indicators	Red Line - 300 Amps
Cabin Differential Pressure Indicator	Red Line - 8.9 PSI Green Arc - 0.0 to 8.9 PSI
Oxygen Pressure Indicator	Red Line - 2000 PSI Yellow Arc - 0.0 to 400 PSI Green Arc - 1600 to 1800 PSI
Brake and Gear Pneumatic Pressure Indicator (In Nose Compartment)	Wide Red Arc - Above 2050 PSI Narrow Red Arc - 0.0 to 1600 PSI Yellow Arc - 1600 to 1800 PSI Wide Green Arc - 1800 to 2050 PSI
Brake Hydraulic Accumulator Pressure Indicator	Light Green Arc - Static Pressure Dark Green Arc - Pressurized Pressure

AUTOPILOT

1. One pilot must remain in his seat with the seat belt fastened during all autopilot operations.
2. Autopilot operation is prohibited if any comparison monitor annunciator illuminates in flight.
3. Minimum use height: 1000 Feet AGL - Enroute
300 Feet AGL - Non-precision Approach
180 Feet AGL - Category I ILS Approach.

HONEYWELL PRIMUS 1000 FLIGHT GUIDANCE SYSTEM

1. The Honeywell Primus 1000 Integrated Avionics System for the Citation Ultra Pilot's Manual must be immediately available to the flight crew (Honeywell publication number A28-1146-099 Revision 3, or later appropriate revision).
2. Category II approaches are not approved.
3. EFIS ground operation with the pilot's NOSE AVN FAN FAIL annunciator light illuminated is limited to 30 minutes or until either PFD HOT or MFD HOT annunciator light illuminates, whichever occurs first.
4. Dispatch in instrument meteorological conditions is prohibited with the NOSE AVN FAN FAIL annunciator light illuminated. Dispatch in visual meteorological conditions is allowed with the AVN FAN annunciator illuminated, provided the NOSE AVN FAN FAIL ILLUMINATED ON GROUND abnormal procedures are followed.
5. Dispatch is prohibited if either the PFD HOT, MFD HOT or IC HOT annunciator light is illuminated.
6. Dispatch is prohibited following a flight where either a PFD HOT, MFD HOT or IC HOT annunciator light was illuminated, until the condition is identified and corrected.
7. The pilot's and copilot's PFDs must be installed and operational in the normal (non-reversionary) mode for takeoff.
8. The P-1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
9. Dual PFD SG reversion to the MFD is prohibited.
10. VOR approaches without a valid co-located DME signal are prohibited with autopilot coupled or with flight director only.

STANDBY FLIGHT INSTRUMENTS

1. A satisfactory preflight test must be accomplished on the standby gyro system.
2. The standby flight display and HSI must be functioning prior to takeoff.

OXYGEN MASK

The pressure demand sweep-on oxygen mask must be properly stowed to qualify as a quick-donning oxygen mask.

NOTE

Headsets, eyeglasses or hats worn by the crew may interfere with the quick-donning capabilities of the oxygen masks.

SUPPLEMENTAL OXYGEN SYSTEM

Continuous use of the supplemental oxygen system with cabin altitude above 25,000 feet with passengers, or with cabin altitude above 37,000 feet, crew only, is prohibited.

HIGH FREQUENCY (HF) AUTOMATIC DIRECTION FINDER (ADF) SYSTEMS

The ADF bearing information may be erratic when keying the HF transmitter. Should this occur, disregard the ADF bearing during periods of transmission.

THRUST REVERSERS

Reverse thrust power must be reduced to the idle reverse detent position at 60 KIAS on landing roll.

Maximum reverse thrust setting is limited to 80.1% fan speed for ambient temperatures at or above -18°C and 76.6% fan speed for ambient temperatures below -18°C.

Maximum allowable thrust reverser deployed time is 15 minutes in any one hour period.

Engine static ground operation is limited to idle power (if thrust reversers are deployed).

Use of thrust reversers is prohibited during touch and go landings.

The thrust reverser(s) must be verified to be operational by the Before Takeoff test in Section III Normal Procedures.

GROUND IDLE SWITCH

The ground idle switch must be in HIGH position when conducting touch and go landings.

The ground idle switch must be in HIGH position when operating on the ground with engine anti-ice bleed ON.

TRIM

The elevator trim system check in Section III, Normal Procedures, must be satisfactorily completed prior to takeoff.

OPERATIONS IN SEVERE ICING CONDITIONS

WARNING

SEVERE ICING MAY RESULT FROM ENVIRONMENTAL CONDITIONS OUTSIDE OF THOSE FOR WHICH THE AIRPLANE IS CERTIFIED. FLIGHT IN FREEZING RAIN, FREEZING DRIZZLE, OR MIXED ICING CONDITIONS (SUPERCOOLED LIQUID WATER AND ICE CRYSTALS) MAY RESULT IN ICE BUILD-UP ON PROTECTED SURFACES EXCEEDING THE CAPABILITY OF THE ICE PROTECTION SYSTEM, OR MAY RESULT IN ICE FORMING AFT OF THE PROTECTED SURFACES. THIS ICE MAY NOT SHED WHEN THE ICE PROTECTION SYSTEMS ARE USED, AND MAY SERIOUSLY DEGRADE THE PERFORMANCE AND CONTROLABILITY OF THE AIRPLANE.

All wing icing inspection lights must be operative prior to flight into known or forecast icing conditions at night.

NOTE

This supersedes relief provided by the Master Minimum Equipment List.

Severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues:

1. Unusually extensive ice accumulation on the airframe and windshield in areas not normally observed to collect ice.
2. Accumulation of ice on the upper surface of the wing aft of the protected area.

If one or more of these visual cues exist:

1. Immediately request priority handling from Air Traffic Control to facilitate a route or altitude change to exit the icing conditions.
2. Leave flaps in current position, do not extend or retract.
3. Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
4. If unusual or uncommanded roll control movement is observed, reduce angle-of-attack.

STANDBY FLIGHT INSTRUMENTS

1. A satisfactory preflight test must be accomplished on the standby gyro system.
2. The standby flight instruments, ATT, ALT/ASI and HSI must be functioning prior to takeoff.
3. The standby airspeed limitations listed on the ALT/KIAS placard apply only when both pilot's and copilot's PFD airspeed tapes are unreliable or inoperative.

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The pressure demand sweep-on oxygen mask must be properly stowed to qualify as a quick-donning oxygen mask.

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OPERATING PROCEDURES - GENERAL

The operating procedures contained in this manual have been developed and recommended by Cessna Aircraft Company and are approved by the FAA for use in the operation of this airplane.

This section contains the emergency, abnormal and normal procedures for your airplane. For your convenience, definitions of these terms are listed in Section I.

Some emergency situations require immediate corrective action. These numbered steps are printed in boxes in the emergency procedures and should be done without the aid of the checklist.

WARNING/CAUTION/ADVISORY LIGHT SYSTEM

Annunciator lights are classified as WARNING, CAUTION, and ADVISORY. All except those associated with the Electronic Flight Instrument System (EFIS), autopilot, avionics, and engine fire warning/suppression systems are located in the annunciator panel. The abnormal and emergency procedures in this section are keyed, where applicable to these annunciators. Warning lights are generally red (except failure of both generators). The warning lights in the annunciator panel will cause the MASTER WARNING RESET light to flash. Failure of both generators (amber annunciators) is considered a red function and triggers the MASTER WARNING. Illumination of the LH/RH ENGINE FIRE light(s) will not trigger the MASTER WARNING light.

CAUTION lights are amber.

ADVISORY lights are white and do not trigger a master warning. When an advisory light is illuminated, pilot action may be required. If an action is required it will be in the abnormal procedures in this section of the flight manual.

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EMERGENCY PROCEDURES

ENGINE FAILURE OR FIRE, OR MASTER WARNING DURING TAKEOFF

SPEED BELOW V_1 - TAKEOFF SHOULD BE ABORTED.

1. Brakes - AS REQUIRED.
2. Throttles - IDLE.
3. Speed Brakes - EXTEND.
4. Thrust Reverser - DEPLOY ON UNAFFECTED ENGINE.

5. Reverser Indicator Lights - CHECK ILLUMINATION of ARM, UNLOCK AND DEPLOY LIGHTS.
6. Thrust Reverser - REVERSE POWER ON THE UNAFFECTED ENGINE.

IF ENGINE FIRE

7. Accomplish Emergency Procedures, ENGINE FIRE.

IF ENGINE FAILURE

7. Accomplish Emergency Procedures, ENGINE FAILURE/PRECAUTIONARY SHUTDOWN.

NOTE

- To obtain maximum braking performance from the antiskid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.
- The Takeoff Field Lengths assume that the pilot has maximum effort applied to the brakes at the scheduled V_1 speed during the aborted takeoff.

SPEED ABOVE V_1 - TAKEOFF SHOULD NORMALLY BE CONTINUED.

1. Rotate - V_R .
2. Landing Gear - UP (after positive rate-of-climb).
3. Climb - V_2 until 1500 feet AGL.

IF ENGINE FIRE

4. At or above 400 feet AGL, accomplish Emergency Procedures, ENGINE FIRE. (Continue with step 5 after complete).
5. Flaps - RETRACT (at 1500 feet AGL and $V_2 + 10$ KIAS, accelerate to V_{ENR}).
6. Throttle (operating engine) - SET Maximum Continuous N_1 .

IF ENGINE FAILURE

4. At or above 400 feet AGL, accomplish Emergency Procedures, EMERGENCY RESTART - ONE ENGINE or Emergency Procedures, ENGINE FAILURE/PRECAUTIONARY SHUTDOWN. (Continue with step 5 after complete).
5. Flaps - RETRACT (at 1500 feet AGL and $V_2 + 10$ KIAS, accelerate to V_{ENR}).
6. Throttle (operating engine) - SET Maximum Continuous N_1 .

ENGINE FAILURE/PRECAUTIONARY SHUTDOWN

1. Throttle (affected engine) - OFF.
2. Ignition (affected engine) - NORM.
3. Engine Synchronizer - OFF.
4. Generator (affected engine) - OFF.
5. Electrical Load - REDUCE as required.
6. Fuel Crossfeed - AS REQUIRED.
7. If Engine Anti-Ice On, Affected Engine ANTI-ICE - XFD.
8. If no fire, Firewall Shutoff - LEAVE OPEN and Fuel Boost Pump - ON.

NOTE

- If no fire hazard or engine damage exists, leave firewall shutoff OPEN and turn fuel boost pump ON to prevent damage to engine-driven fuel pump.
 - If engine windmills with firewall shutoff CLOSED or with no indication of oil pressure, after landing refer to Engine Maintenance Manual.
9. Refer to Emergency Procedures, EMERGENCY RESTART - ONE ENGINE or Abnormal Procedures, SINGLE-ENGINE APPROACH and LANDING.

ENGINE FAILURE DURING COUPLED APPROACH

1. Power (operating engine) - INCREASE as required.
 2. Autopilot and Yaw Damper - OFF.
 3. Airspeed - V_{APP} .
 4. Rudder Trim - TRIM toward operating engine as desired.
 5. Flaps - TAKEOFF and APPROACH.
6. Throttle (affected engine) - OFF.
 7. If engine fire, accomplish Emergency Procedures, ENGINE FIRE.
 8. Passenger Advisory Lights - PASS SAFETY.
 9. Passenger Seats - CHECK FULL UPRIGHT and OUTBOARD. FORWARD to clear exit doors.
 10. Seats, Seat Belts and Shoulder Harnesses - SECURE.
 11. Fuel Crossfeed - CHECK.
 12. Ignition (operating engine) - ON.
 13. Landing Gear - DOWN and LOCKED.
 14. Antiskid - CHECK ON.
 15. Annunciator Panel - CHECK.
 16. Flaps - LAND (when landing assured).
 17. Airspeed - V_{REF} .
 18. Pressurization - CHECK ZERO DIFFERENTIAL.
 19. Speed Brakes - RETRACTED PRIOR TO 50 FEET.

NOTE

Do not allow N_2 (turbine) RPM to be less than 52%.

EMERGENCY RESTART - ONE ENGINE (Refer to Figure 3-1 for Airstart Envelope)**FOLLOWING SHUTDOWN - WITH STARTER ASSIST**

1. Throttle - OFF.
2. Generator - GEN.
3. Firewall Shutoff - CHECK OPEN.
4. BOV Circuit Breaker (affected engine) - PULL and RESET.
5. Ignition - ON.
6. Start Button - PRESS momentarily.
7. Throttle - IDLE at 8% N₂ minimum.
8. Engine Instruments - MONITOR.
9. Ignition - NORM.

NOTE

A heading fail flag may appear momentarily (1-2 sec.) during a starter assisted airstart.

IF START DOES NOT OCCUR

10. Starter Disengage Button - PRESS.
11. Accomplish Emergency Procedures, ENGINE FAILURE/PRECAUTIONARY SHUTDOWN.

FOLLOWING SHUTDOWN - WINDMILLING WITH AIRSPEED ABOVE 200 KIAS.

1. Throttle - OFF.
2. Firewall Shutoff - CHECK OPEN.
3. BOV Circuit Breaker (affected engine) - PULL and RESET.
4. Ignition - ON.
5. Boost Pump - ON.
6. Throttle - IDLE.
7. Engine Instruments - MONITOR.
8. After engine stabilizes, Boost Pump and Ignition - NORM.
9. Generator - GEN.

NOTE

During high altitude windmilling starts below approximately 220 KIAS, fuel/air mixture instability may result in engine rumble and ITT above 500°C as engine accelerates between approximately 30% and 42% N₂. This is normal and not hazardous as long as ITT does not exceed limits.

EMERGENCY RESTART - TWO ENGINES (Refer to Figure 3-1 for Airstart Envelope)

- | |
|--|
| <ol style="list-style-type: none">1. Ignition - BOTH ON.2. Boost Pumps - BOTH ON.3. Throttles - IDLE.4. If altitude allows - INCREASE AIRSPEED to 200 KIAS. |
|--|

5. Firewall Shutoff - CHECK OPEN.
6. BOV Circuit Breaker (affected engines) - PULL and RESET.
7. All Anti-Ice Switches - OFF.
8. If no start in ten seconds: Either Start Button - PRESS momentarily.

AIRSTART ENVELOPE

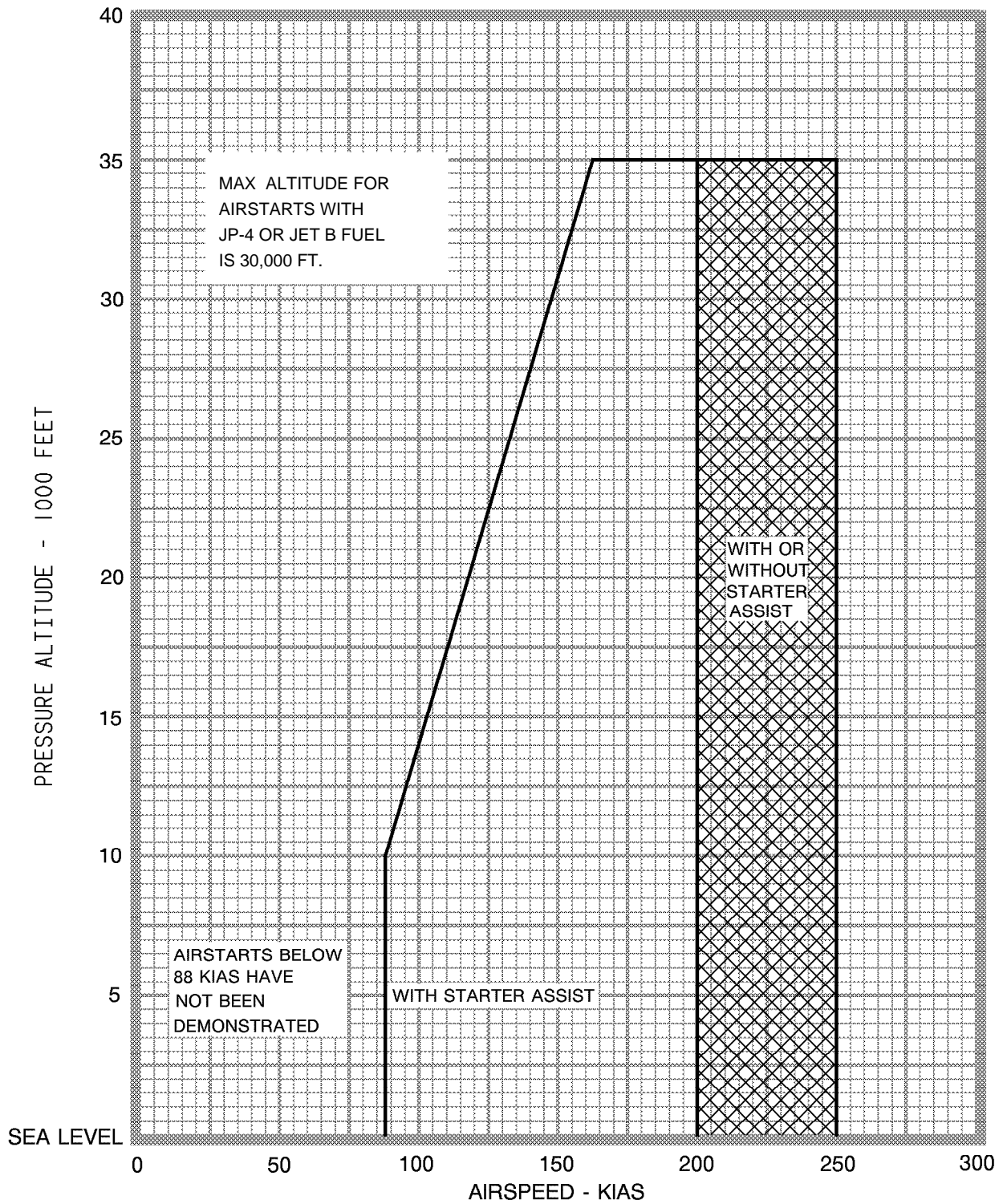


Figure 3-1



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ENGINE FIRE (LH OR RH ENGINE FIRE WARNING LIGHT/SWITCH ILLUMINATED)

1. Throttle (affected engine) - IDLE.

IF LIGHT REMAINS ON

2. Engine Fire Switch - LIFT COVER and PUSH.
3. Either Illuminated Bottle Armed Light - PUSH.
4. Ignition - NORM.
5. Throttle (affected engine) - OFF.
6. Reduce Electrical Load - AS REQUIRED.
7. Boost Pump - OFF.
8. If engine Anti-ice ON, Affected Engine Anti-ice - XFD.
9. Land as soon as practical.

IF FIRE WARNING LIGHT REMAINS ON AFTER 30 SECONDS

10. Remaining Illuminated Bottle Armed Light - PUSH.
11. Land as soon as possible.

IF LIGHT GOES OUT AND SECONDARY INDICATIONS ARE NOT PRESENT

2. Land as soon as practical.

MAXIMUM GLIDE - EMERGENCY LANDING

1. Airspeed - 126 KIAS at 11,000 pounds. Increase speed approximately 3 KIAS per 500 pound increase in weight.

MAXIMUM GLIDE AIRSPEED

WEIGHT	11,000	12,000	13,000	14,000	15,000	16,000	16,300
KIAS	126	132	138	144	150	156	158

2. Flaps - UP.
3. Speed Brakes - RETRACT.
4. Landing Gear - UP.
5. Transponder - EMERGENCY.
6. ATC - ADVISE.
7. Passenger Advisory Switch - PASS SAFETY.
8. Shoulder Harness - SECURE.
9. Landing Gear, Speed Brakes and Flaps - AS REQUIRED (above 150 KIAS).

DITCHING

Ditching is not approved under FAR 25.801 and was not conducted during certification testing of the airplane. Should ditching be required, the following procedures are recommended:

PRELIMINARY

1. Bleed Air Selector - OFF.
2. Radio - MAYDAY.

(Continued Next Page)

DITCHING (Continued)

3. Transponder - EMERGENCY.
4. Locator Beacon - EMER.
5. ATC - ADVISE.
6. Passenger Advisory Lights - PASS SAFETY.
7. Prepare Passengers for Ditching.
8. Rate of Descent - 200/300 feet/minute.
9. Ditching Heading - Parallel to Major Swell System.

APPROACH

1. Landing Gear - UP.
2. Flaps - LAND.
3. Approach Speed - V_{REF} .

NOTE

Plan approach to parallel any uniform swell pattern and attempt to touch down along a wave crest or just behind it. If the surface wind is very strong or the water surface rough and irregular, ditch into the wind on the back side of a wave.

WATER CONTACT

1. Aircraft Pitch Attitude - Slightly higher than Normal Landing Attitude.
2. Reduce airspeed and rate of descent to a minimum, but do not stall the airplane.
3. Throttles - OFF just prior to water contact and contact water on a crest of a swell, parallel to the major swell.

AFTER WATER CONTACT

Under reasonable ditching conditions, the aircraft should remain afloat an adequate time to launch and board life rafts in an orderly manner.

WARNING

**THE MAIN CABIN DOOR SHOULD REMAIN CLOSED AND
EVACUATION MADE THROUGH THE EMERGENCY EXIT.**

ELECTRICAL FIRE OR SMOKE

- | |
|---|
| <ol style="list-style-type: none">1. Oxygen Masks - DON and EMER.2. Oxygen Microphone Switches - MIC OXY MASK. |
|---|
3. Pressurization Source Selector - NORMAL.

CAUTION

WHETHER OR NOT SMOKE HAS DISSIPATED, IF IT CAN NOT BE VISIBLY CONFIRMED THAT ANY FIRE HAS BEEN EXTINGUISHED FOLLOWING FIRE SUPPRESSION AND/OR SMOKE EVACUATION PROCEDURE, LAND IMMEDIATELY AT THE NEAREST SUITABLE AIRPORT.

(Continued Next Page)

ELECTRICAL FIRE OR SMOKE (Continued)**KNOWN SOURCE**

4. Faulty Circuit(s) - PULL CIRCUIT BREAKER(S) to isolate.

UNKNOWN SOURCE

4. Flood Lights - FULL BRIGHT.
5. Battery Switch - EMER.
6. Generators - OFF - With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Flight Display
DG 1	Pilot's and Copilot's Audio Panels	
Standby HSI		

The standby flight display will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOWDOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.

THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAPS INOPERATIVE LANDING MUST BE MADE.

THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.

THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI-ICE ON THRUST CHARTS.

THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).

ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATORS WILL BE INOPERATIVE.

7. Windshield Bleed Air Manual Valves - OFF.
8. DC Power RH Bus No. 1, 2 and 3 Circuit Breakers (on RH Panel) - PULL.
9. RH CB Panel Circuit Breaker (on LH Panel) - PULL.
10. AC Inverter No. 1 Circuit Breaker (on LH Panel) - PULL.
11. Land as soon as practical (within 30 minutes).

IF SEVERITY OF SMOKE WARRANTS

11. Initiate Emergency Procedures, SMOKE REMOVAL and/or EMERGENCY DESCENT. Land as soon as possible.

(Continued Next Page)

ELECTRICAL FIRE OR SMOKE (Continued)

WHEN LANDING ASSURED

12. LH Generator - GEN.
13. Landing Gear - DOWN.
14. Flaps - LAND.
15. Airspeed - V_{REF} .

IF SMOKE OR FIRE RESTARTS

16. LH Generator - OFF.
17. Landing - Plan for wheel brakes failure. Refer to Abnormal Procedures, WHEEL BRAKE FAILURE.

NOTE

Antiskid systems will be inoperative. Power brakes will be available until accumulator discharges. Multiply landing distance by 1.3. Be prepared to use the emergency brake system.

BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING)

- | |
|--|
| <ol style="list-style-type: none">1. Amperage - NOTE.2. Battery Switch - EMER.3. Amperage - NOTE DECREASE. |
|--|

4. If battery voltage is one volt less than generator voltage in 30 seconds to 2 minutes, monitor battery overheat annunciator for possible change.

IF VOLT/AMP DECREASE

5. Battery Switch - OFF (voltmeter will be inoperative).

IF BATTERY O'TEMP LIGHT GOES OUT

6. Battery Switch - BATT.

IF NO AMP DECREASE OR BATTERY O'TEMP LIGHT FLASHES

5. Flood Lights - FULL BRIGHT.
6. Battery Switch - EMER.
7. Generators - OFF. The BATT O'TEMP light will extinguish immediately when the generators are turned off if the battery relay is not stuck. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment.

COMM 1	LH and RH N_1 Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Flight Display
DG 1	Pilot's and Copilot's Audio Panels	
Standby HSI		

(Continued Next Page)

ELECTRICAL FIRE OR SMOKE (Continued)**KNOWN SOURCE**

4. Faulty Circuit(s) - PULL CIRCUIT BREAKER(S) to isolate.

UNKNOWN SOURCE

4. Flood Lights - FULL BRIGHT.
5. Battery Switch - EMER.
6. Generators - OFF - With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Altitude/Airspeed Indicator
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI		

The standby attitude indicator will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOWDOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.

THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAPS INOPERATIVE LANDING MUST BE MADE.

THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.

THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI-ICE ON THRUST CHARTS.

THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).

ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATORS WILL BE INOPERATIVE.

7. Windshield Bleed Air Manual Valves - OFF.
8. DC Power RH Bus No. 1, 2 and 3 Circuit Breakers (on RH Panel) - PULL.
9. RH CB Panel Circuit Breaker (on LH Panel) - PULL.
10. AC Inverter No. 1 Circuit Breaker (on LH Panel) - PULL.
11. Land as soon as practical (within 30 minutes).

IF SEVERITY OF SMOKE WARRANTS

11. Initiate Emergency Procedures, SMOKE REMOVAL and/or EMERGENCY DESCENT. Land as soon as possible.

(Continued Next Page)

ELECTRICAL FIRE OR SMOKE (Continued)

WHEN LANDING ASSURED

12. LH Generator - GEN.
13. Landing Gear - DOWN.
14. Flaps - LAND.
15. Airspeed - V_{REF} .

IF SMOKE OR FIRE RESTARTS

16. LH Generator - OFF.
17. Landing - Plan for wheel brakes failure. Refer to Abnormal Procedures, WHEEL BRAKE FAILURE.

NOTE

Antiskid systems will be inoperative. Power brakes will be available until accumulator discharges. Multiply landing distance by 1.3. Be prepared to use the emergency brake system.

BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING)

- | |
|--|
| <ol style="list-style-type: none">1. Amperage - NOTE.2. Battery Switch - EMER.3. Amperage - NOTE DECREASE. |
|--|

4. If battery voltage is one volt less than generator voltage in 30 seconds to 2 minutes, monitor battery overheat annunciator for possible change.

IF VOLT/AMP DECREASE

5. Battery Switch - OFF (voltmeter will be inoperative).

IF BATTERY O'TEMP LIGHT GOES OUT

6. Battery Switch - BATT.

IF NO AMP DECREASE OR BATTERY O'TEMP LIGHT FLASHES

5. Flood Lights - FULL BRIGHT.
6. Battery Switch - EMER.
7. Generators - OFF. The BATT O'TEMP light will extinguish immediately when the generators are turned off if the battery relay is not stuck. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment.

COMM 1	LH and RH N_1 Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Altitude/Airspeed Indicator
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI		

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BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING) (Continued)

The standby flight display will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOWDOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.

THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAPS INOPERATIVE LANDING MUST BE MADE.

THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.

THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI-ICE ON THRUST CHARTS.

THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).

ALL ENGINE INSTRUMENTS EXCEPT THE N_1 INDICATORS WILL BE INOPERATIVE.

(Continued Next Page)

BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING) (Continued)

IF NORMAL DC POWER IS LOST (BATTERY RELAY NOT STUCK)

8. Generators - GEN (BATT O'TEMP light will come back on until battery cools).
9. Battery Switch - OFF.

CAUTION

AFTER LANDING, REFER TO AIRPLANE MAINTENANCE MANUAL FOR PROPER MAINTENANCE PROCEDURES, AS DAMAGE TO THE BATTERY MAY HAVE OCCURRED.

10. Land as soon as practical.

IF NO DC POWER LOST (BATTERY RELAY STUCK)

8. Windshield Bleed Air Manual Valves - OFF.
9. DC Power LH and RH BUS NO. 1, 2 and 3 Circuit Breakers - PULL.
10. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

11. DC Power LH and RH Bus Circuit Breakers - RESET.
12. Landing Gear - DOWN.
13. Flaps - LAND.
14. Airspeed - V_{REF} .

CAUTION

AFTER LANDING, REFER TO AIRPLANE MAINTENANCE MANUAL FOR PROPER MAINTENANCE PROCEDURES, AS DAMAGE TO THE BATTERY MAY HAVE OCCURRED.

BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING) (Continued)

- The standby attitude indicator will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOWDOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.

THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAPS INOPERATIVE LANDING MUST BE MADE.

THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.

THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI-ICE ON THRUST CHARTS.

THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).

ALL ENGINE INSTRUMENTS EXCEPT THE N_1 INDICATORS WILL BE INOPERATIVE.

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BATTERY OVERHEAT (BATT O'TEMP WARNING LIGHT ON AND MASTER WARNING) (Continued)

IF NORMAL DC POWER IS LOST (BATTERY RELAY NOT STUCK)

8. Generators - GEN (BATT O'TEMP light will come back on until battery cools).
9. Battery Switch - OFF.

CAUTION

AFTER LANDING, REFER TO AIRPLANE MAINTENANCE MANUAL FOR PROPER MAINTENANCE PROCEDURES, AS DAMAGE TO THE BATTERY MAY HAVE OCCURRED.

10. Land as soon as practical.

IF NO DC POWER LOST (BATTERY RELAY STUCK)

8. Windshield Bleed Air Manual Valves - OFF.
9. DC Power LH and RH BUS NO. 1, 2 and 3 Circuit Breakers - PULL.
10. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

11. DC Power LH and RH Bus Circuit Breakers - RESET.
12. Landing Gear - DOWN.
13. Flaps - LAND.
14. Airspeed - V_{REF} .

CAUTION

AFTER LANDING, REFER TO AIRPLANE MAINTENANCE MANUAL FOR PROPER MAINTENANCE PROCEDURES, AS DAMAGE TO THE BATTERY MAY HAVE OCCURRED.

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING)

1. Generators - RESET THEN GEN.

IF ONLY ONE GENERATOR COMES ON

2. Electrical Load - REDUCE as required.

IF NEITHER GENERATOR COMES ON

2. Floodlights - FULL BRIGHT.
3. Battery Switch - EMER. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Flight Display
DG 1	Pilot's and Copilot's Audio Panels	
Standby HSI	Voltmeter	

The standby flight display will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

- THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOWDOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.
 - THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAPS INOPERATIVE LANDING MUST BE MADE.
 - THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.
 - THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI-ICE ON THRUST CHARTS.
 - THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).
 - ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATORS WILL BE INOPERATIVE.
4. Windshield Bleed Air Manual Valves - OFF or MINIMUM for clear vision through windshield.
 5. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

6. Battery Switch - BATT.

AC POWER FAILURE (BOTH INVERTER FAIL 1 AND 2, AC FAIL, AND MASTER WARNING LIGHTS ON) DUAL INVERTER FAILURE

1. INV 1/INV 2 Switch - NORM.
2. Inverter Circuit Breakers (AC Inverter No. 1 on LH panel and AC Inverter No. 2 on RH Panel) - CHECK and RESET.

IF ONE OR BOTH INVERTERS RESET

3. INV 1/INV 2 Switch - SELECT Operating Inverter.
4. Land as soon as practical.

IF BOTH INVERTERS WILL NOT RESET

3. AC Inverter No.1 Circuit Breaker (LH Panel) - PULL
4. INVTR FAIL 2 Annunciator - CHECK (No annunciation indicates recovery of Inverter 2)

NOTE

If Inverter 2 recovers, do not reset inverter No. 1 breaker.

IF INVTR FAIL 2 ANNUNCIATOR REMAINS ILLUMINATED

5. AC Inverter No. 1 Circuit Breaker (LH Panel) - RESET
6. AC Inverter No. 2 Circuit Breaker (RH Panel) - PULL
7. INVTR FAIL 1 Annunciator - CHECK (No annunciation indicates recovery of Inverter 1)

NOTE

If Inverter 1 recovers, do not reset inverter No. 2 breaker.

IF INVERTER 1 OR 2 RECOVERS (INVTR FAIL 1 OR 2 ANNUNCIATOR EXTINGUISHED)

8. INV 1/INV 2 Switch - SELECT Operating Inverter
9. Land as soon as practical.

IF BOTH INVERTERS REMAIN FAILED

10. Battery Switch - EMER.

NOTE

If the inverters will not come back on line after the circuit breakers have been reset, complete the flight by using the standby flight instruments. Placing the battery switch to EMER will provide AC power from the static inverter in DG1 to power the standby compass system and NAV 1.

The Honeywell EFIS system (PFDs and MFD) will be inoperative with electrical system failure. With the battery switch in EMER, NAV 1 and compass information will be displayed on the Standby HSI. Refer to the standby attitude gyro and standby altimeter/airspeed indicator for attitude, altitude, and airspeed information.

11. Land as soon as practical (within 30 minutes).

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING)

1. Generators - RESET THEN GEN.

IF ONLY ONE GENERATOR COMES ON

2. Electrical Load - REDUCE as required.

IF NEITHER GENERATOR COMES ON

2. Floodlights - FULL BRIGHT.
3. Battery Switch - EMER. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Airspeed Indicator/Altimeter
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI	Voltmeter	

The standby attitude indicator will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

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 - ALL ENGINE INSTRUMENTS EXCEPT THE N1 INDICATORS WILL BE INOPERATIVE.
4. Windshield Bleed Air Manual Valves - OFF or MINIMUM for clear vision through windshield.
 5. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

6. Battery Switch - BATT.

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1. INV 1/INV 2 Switch - NORM.
2. Inverter Circuit Breakers (AC Inverter No. 1 on LH panel and AC Inverter No. 2 on RH Panel) - CHECK and RESET.

IF ONE OR BOTH INVERTERS RESET

3. INV 1/INV 2 Switch - SELECT Operating Inverter.
4. Land as soon as practical.

IF BOTH INVERTERS WILL NOT RESET

3. AC Inverter No.1 Circuit Breaker (LH Panel) - PULL
4. INVTR FAIL 2 Annunciator - CHECK (No annunciation indicates recovery of Inverter 2)

NOTE

If Inverter 2 recovers, do not reset inverter No. 1 breaker.

IF INVTR FAIL 2 ANNUNCIATOR REMAINS ILLUMINATED

5. AC Inverter No. 1 Circuit Breaker (LH Panel) - RESET
6. AC Inverter No. 2 Circuit Breaker (RH Panel) - PULL
7. INVTR FAIL 1 Annunciator - CHECK (No annunciation indicates recovery of Inverter 1)

NOTE

If Inverter 1 recovers, do not reset inverter No. 2 breaker.

IF INVERTER 1 OR 2 RECOVERS (INVTR FAIL 1 OR 2 ANNUNCIATOR EXTINGUISHED)

8. INV 1/INV 2 Switch - SELECT Operating Inverter
9. Land as soon as practical.

IF BOTH INVERTERS REMAIN FAILED

10. Battery Switch - EMER.

NOTE

If the inverters will not come back on line after the circuit breakers have been reset, complete the flight by using the standby flight instruments. Placing the battery switch to EMER will provide AC power from the static inverter in DG1 to power the standby compass system and NAV 1.

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11. Land as soon as practical (within 30 minutes).

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING)

1. Generators - RESET THEN GEN.

IF ONLY ONE GENERATOR COMES ON

2. Electrical Load - REDUCE as required.

IF NEITHER GENERATOR COMES ON

2. Floodlights - FULL BRIGHT.
3. Battery Switch - EMER. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
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Standby HSI	Voltmeter	

The standby flight display will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

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 - THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).
 - ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATORS WILL BE INOPERATIVE.
4. Windshield Bleed Air Manual Valves - OFF or MINIMUM for clear vision through windshield.
 5. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

6. Battery Switch - BATT.

AC POWER FAILURE (BOTH INVERTER FAIL 1 AND 2, AC FAIL, AND MASTER WARNING LIGHTS ON) DUAL INVERTER FAILURE

1. Inverter Circuit Breakers (AC Inverter No. 1 on LH panel and AC Inverter No. 2 on RH Panel) - CHECK and RESET.

IF ONE OR BOTH INVERTERS RESET

2. Land as soon as practical.

IF BOTH INVERTERS WILL NOT RESET

3. AC Inverter No.1 Circuit Breaker (LH Panel) - PULL
4. INVTR FAIL 2 Annunciator - CHECK (No annunciation indicates recovery of Inverter 2)

NOTE

If Inverter 2 recovers, do not reset inverter No. 1 breaker.

IF INVTR FAIL 2 ANNUNCIATOR REMAINS ILLUMINATED

5. AC Inverter No. 1 Circuit Breaker (LH Panel) - RESET
6. AC Inverter No. 2 Circuit Breaker (RH Panel) - PULL
7. INVTR FAIL 1 Annunciator - CHECK (No annunciation indicates recovery of Inverter 1)

NOTE

If Inverter 1 recovers, do not reset inverter No. 2 breaker.

IF INVERTER 1 OR 2 RECOVERS (INVTR FAIL 1 OR 2 ANNUNCIATOR EXTINGUISHED)

8. Land as soon as practical.

IF BOTH INVERTERS REMAIN FAILED

9. Battery Switch - EMER.

NOTE

If the inverters will not come back on line after the circuit breakers have been reset, complete the flight by using the standby flight instruments. Placing the battery switch to EMER will provide AC power from the static inverter in DG1 to power the standby compass system and NAV 1.

The Honeywell EFIS system (PFDs and MFD) will be inoperative with electrical system failure. With the battery switch in EMER, NAV 1 and compass information will be displayed on the Standby HSI. Refer to the standby attitude gyro and standby altimeter/airspeed indicator for attitude, altitude, and airspeed information.

10. Land as soon as practical (within 30 minutes).

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING)

1. Generators - RESET THEN GEN.

IF ONLY ONE GENERATOR COMES ON

2. Electrical Load - REDUCE as required.

IF NEITHER GENERATOR COMES ON

2. Floodlights - FULL BRIGHT.
3. Battery Switch - EMER. With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
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DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI	Voltmeter	

The standby attitude indicator will continue to operate on its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

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 - THE RAM AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).
 - ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATORS WILL BE INOPERATIVE.
4. Windshield Bleed Air Manual Valves - OFF or MINIMUM for clear vision through windshield.
 5. Land as soon as practical (within 30 minutes).

WHEN LANDING ASSURED

6. Battery Switch - BATT.

AC POWER FAILURE (BOTH INVERTER FAIL 1 AND 2, AC FAIL, AND MASTER WARNING LIGHTS ON) DUAL INVERTER FAILURE

1. Inverter Circuit Breakers (AC Inverter No. 1 on LH panel and AC Inverter No. 2 on RH Panel) - CHECK and RESET.

IF ONE OR BOTH INVERTERS RESET

2. Land as soon as practical.

IF BOTH INVERTERS WILL NOT RESET

3. AC Inverter No.1 Circuit Breaker (LH Panel) - PULL
4. INVTR FAIL 2 Annunciator - CHECK (No annunciation indicates recovery of Inverter 2)

NOTE

If Inverter 2 recovers, do not reset inverter No. 1 breaker.

IF INVTR FAIL 2 ANNUNCIATOR REMAINS ILLUMINATED

5. AC Inverter No. 1 Circuit Breaker (LH Panel) - RESET
6. AC Inverter No. 2 Circuit Breaker (RH Panel) - PULL
7. INVTR FAIL 1 Annunciator - CHECK (No annunciation indicates recovery of Inverter 1)

NOTE

If Inverter 1 recovers, do not reset inverter No. 2 breaker.

IF INVERTER 1 OR 2 RECOVERS (INVTR FAIL 1 OR 2 ANNUNCIATOR EXTINGUISHED)

8. Land as soon as practical.

IF BOTH INVERTERS REMAIN FAILED

9. Battery Switch - EMER.

NOTE

If the inverters will not come back on line after the circuit breakers have been reset, complete the flight by using the standby flight instruments. Placing the battery switch to EMER will provide AC power from the static inverter in DG1 to power the standby compass system and NAV 1.

The Honeywell EFIS system (PFDs and MFD) will be inoperative with electrical system failure. With the battery switch in EMER, NAV 1 and compass information will be displayed on the Standby HSI. Refer to the standby attitude gyro and standby altimeter/airspeed indicator for attitude, altitude, and airspeed information.

10. Land as soon as practical (within 30 minutes).

AC POWER AND/OR DISTRIBUTION FAILURE (AC FAIL LIGHT ON AFTER MASTER WARNING HAS BEEN RESET, INVERTER FAIL 1 AND 2 LIGHTS OUT)

1. Check the right sub-circuit breaker panel for disengaged AC BUS circuit breaker(s).

CAUTION

IF CIRCUIT BREAKER(S) IS DISENGAGED, OPERATE WITH LOSS OF BUS AS RE-ENGAGEMENT MAY RESULT IN FURTHER DAMAGE TO THE ELECTRICAL SYSTEM.

NOTE

Depending on which bus(es) has been lost, the following equipment will be lost:

- | | | |
|----|---------------|-----------------------------|
| a. | 26 VAC Bus 1 | Yaw Rate Gyro and TCAS, DG1 |
| b. | 115 VAC Bus 1 | VG1 |
| c. | 26 VAC Bus 2 | Radar, DG2 |
| d. | 115 VAC Bus 2 | VG2 |

In addition, if any of the AC Busses are lost, neither autopilot nor Flight Director can be used.

PFD/MFD RED GUN FAILURE

The failure of a red gun in an electronic display indicator results in the following presentations:

- PFD - Sky turns from dark blue to a dull dark blue.
- Ground turns from brown to green hue
- Compass rose turns from white to blue.

1. Use display with caution - MONITOR remaining displays for any red annunciators.

WARNING

FOLLOWING A FAILURE OF A RED GUN IN A DISPLAY UNIT, THE RED WARNING ANNUNCIATORS WILL NOT BE VISIBLE.

PFD ATTITUDE FAILURE - DUAL (ATT ANNUNCIATOR ILLUMINATED)

1. Airplane Attitude - CONTROL by reference to standby flight display in pilot's panel.

PFD HEADING FAILURE - DUAL (HDG ANNUNCIATOR ILLUMINATED)

1. Airplane Heading - CONTROL by reference to standby HSI in pilot's panel.

AIR DATA COMPUTER FAILURE - DUAL (ADC ANNUNCIATOR ILLUMINATED)

1. Airplane airspeed and altitude - MONITOR by reference to standby flight display in pilot's panel.

DISPLAY GUIDANCE COMPUTER FAILURE - DUAL (RED "X" OR BLANK PFD'S/MFD)

1. Airplane - CONTROL by reference to standby flight display in pilot's panel.

OVERPRESSURIZATION

1. Cabin Altitude Selector - SET to higher cabin altitude.
2. Rate Control - INCREASE.

IF STILL OVERPRESSURIZED

3. Pressurization Source Select - LH or RH; control cabin pressure with throttle.

IF UNABLE TO CONTROL

4. Oxygen Masks - DON and 100% OXYGEN.
5. Oxygen Control Valve - MANUAL DROP.
6. Passenger Oxygen - ENSURE passengers are receiving oxygen.
7. Oxygen Microphone Switches - MIC OXY MASK.
8. Passenger Advisory Light - PASS SAFETY.
9. Pressurization Source Selector - OFF.
10. Descend.

IF STILL OVERPRESSURIZED

11. Emergency Dump Switch - DUMP.
12. Refer to Abnormal Procedures, USE OF SUPPLEMENTAL OXYGEN.

CABIN DECOMPRESSION (CAB ALT 10000 FT LIGHT ON)

1. Oxygen Masks - DON and 100% OXYGEN.
 2. Emergency Descent - AS REQUIRED.
 3. Passenger Oxygen - ENSURE passengers are receiving oxygen.
 4. Oxygen Microphone Switches - MIC OXY MASK.
5. Transponder - EMERGENCY.
 6. Refer to Abnormal Procedures, USE OF SUPPLEMENTAL OXYGEN.

EMERGENCY DESCENT

1. Throttles - IDLE.
 2. Speed Brakes - EXTEND.
 3. Initiate Moderate Bank.
 4. Airplane Pitch Attitude - APPROXIMATELY 25 DEGREES NOSE DOWN.
5. Passenger Advisory Lights - PASS SAFETY.
 6. Maximum Airspeed - V_{MO}/M_{MO} (use reduced speed if structural damage has occurred).
 7. Transponder - EMERGENCY.

IF DESCENT INTO ICING CONDITIONS IS REQUIRED

8. Anti-Ice/Deice - AS REQUIRED.
9. Throttles - AS REQUIRED maintain sufficient power for anti-icing (ENGINE ANTI-ICE annunciators extinguished).

ENVIRONMENTAL SYSTEM SMOKE OR ODOR

1. Oxygen Masks - DON and EMER.
2. Oxygen Microphone Switches - AS REQUIRED.
3. Cabin (OVHD) Fan - OFF.
4. Defog Fan - OFF.
5. Pressurization Source Selector - ISOLATE SOURCE by first selecting LH.

NOTE

Pressurization source selector must remain in each position long enough to allow adequate system purging to determine the source of smoke.

IF SMOKE CONTINUES

6. Pressurization Source Selector - RH (allow time for smoke to dissipate).

IF SMOKE STILL CONTINUES (AIR CYCLE MACHINE MAY BE LEAKING)

7. Pressurization Source Selector - EMER (control cabin pressure with LH throttle).

PFD/MFD RED GUN FAILURE

The failure of a red gun in an electronic display indicator results in the following presentations:

- PFD - Sky turns from dark blue to a dull dark blue.
- Ground turns from brown to green hue
- Compass rose turns from white to blue.

1. Use display with caution - MONITOR remaining displays for any red annunciators.

WARNING

FOLLOWING A FAILURE OF A RED GUN IN A DISPLAY UNIT, THE RED WARNING ANNUNCIATORS WILL NOT BE VISIBLE.

PFD ATTITUDE FAILURE - DUAL (ATT ANNUNCIATOR ILLUMINATED)

1. Airplane Attitude - CONTROL by reference to standby attitude gyro in pilot's panel.

PFD HEADING FAILURE - DUAL (HDG ANNUNCIATOR ILLUMINATED)

1. Airplane Heading - CONTROL by reference to standby HSI in pilot's panel.

AIR DATA COMPUTER FAILURE - DUAL (ADC ANNUNCIATOR ILLUMINATED)

1. Airplane airspeed and altitude - MONITOR by reference to standby airspeed/altimeter in pilot's panel.

DISPLAY GUIDANCE COMPUTER FAILURE - DUAL (RED "X" OR BLANK PFD'S/MFD)

1. Airplane - CONTROL by reference to standby flight instruments in pilot's panel.

OVERPRESSURIZATION

1. Cabin Altitude Selector - SET to higher cabin altitude.
2. Rate Control - INCREASE.

IF STILL OVERPRESSURIZED

3. Pressurization Source Select - LH or RH; control cabin pressure with throttle.

IF UNABLE TO CONTROL

4. Oxygen Masks - DON and 100% OXYGEN.
5. Oxygen Control Valve - MANUAL DROP.
6. Passenger Oxygen - ENSURE passengers are receiving oxygen.
7. Oxygen Microphone Switches - MIC OXY MASK.
8. Passenger Advisory Light - PASS SAFETY.
9. Pressurization Source Selector - OFF.
10. Descend.

IF STILL OVERPRESSURIZED

11. Emergency Dump Switch - DUMP.
12. Refer to Abnormal Procedures, USE OF SUPPLEMENTAL OXYGEN.

CABIN DECOMPRESSION (CAB ALT 10000 FT LIGHT ON)

1. Oxygen Masks - DON and 100% OXYGEN.
 2. Emergency Descent - AS REQUIRED.
 3. Passenger Oxygen - ENSURE passengers are receiving oxygen.
 4. Oxygen Microphone Switches - MIC OXY MASK.
5. Transponder - EMERGENCY.
 6. Refer to Abnormal Procedures, USE OF SUPPLEMENTAL OXYGEN.

EMERGENCY DESCENT

1. Throttles - IDLE.
 2. Speed Brakes - EXTEND.
 3. Initiate Moderate Bank.
 4. Airplane Pitch Attitude - APPROXIMATELY 25 DEGREES NOSE DOWN.
5. Passenger Advisory Lights - PASS SAFETY.
 6. Maximum Airspeed - V_{MO}/M_{MO} (use reduced speed if structural damage has occurred).
 7. Transponder - EMERGENCY.

IF DESCENT INTO ICING CONDITIONS IS REQUIRED

8. Anti-Ice/Deice - AS REQUIRED.
9. Throttles - AS REQUIRED maintain sufficient power for anti-icing (ENGINE ANTI-ICE annunciators extinguished).

ENVIRONMENTAL SYSTEM SMOKE OR ODOR

1. Oxygen Masks - DON and EMER.
2. Oxygen Microphone Switches - AS REQUIRED.
3. Cabin (OVHD) Fan - OFF.
4. Defog Fan - OFF.
5. Pressurization Source Selector - ISOLATE SOURCE by first selecting LH.

NOTE

Pressurization source selector must remain in each position long enough to allow adequate system purging to determine the source of smoke.

IF SMOKE CONTINUES

6. Pressurization Source Selector - RH (allow time for smoke to dissipate).

IF SMOKE STILL CONTINUES (AIR CYCLE MACHINE MAY BE LEAKING)

7. Pressurization Source Selector - EMER (control cabin pressure with LH throttle).

SMOKE REMOVAL**NOTE**

No action is normally required; however, if smoke is intense:

1. Oxygen Masks - DON and EMER.
2. Oxygen Control Valve - MANUAL DROP.
3. Cockpit Divider Door - OPEN.
4. Passenger Oxygen - ENSURE passengers are receiving oxygen.
5. Oxygen Microphone Switches - MIC OXY MASK.
6. Passenger Advisory Light - PASS SAFETY.
7. Cabin Altitude Selector - SET to higher cabin altitude.
8. Emergency Dump Switch - DUMP (cabin Altitude will not exceed approximately 14,000 feet).
9. Refer to Abnormal Procedures, USE OF SUPPLEMENTAL OXYGEN.

IF SMOKE PERSISTS OR IT CANNOT BE VERIFIED THAT THERE IS NO FIRE

10. Land as soon as possible.

CAUTION

WHETHER OR NOT SMOKE HAS DISSIPATED, IF IT CAN NOT BE VISIBLY CONFIRMED THAT ANY FIRE HAS BEEN EXTINGUISHED FOLLOWING FIRE SUPPRESSION AND/OR SMOKE EVACUATION PROCEDURE, LAND IMMEDIATELY AT THE NEAREST SUITABLE AIRPORT.

THRUST REVERSER INADVERTENT DEPLOYMENT DURING TAKEOFF**SPEED BELOW V_1 - TAKEOFF SHOULD BE ABORTED.**

- | |
|--|
| <ol style="list-style-type: none">1. Brakes - AS REQUIRED.2. Throttles - IDLE.3. Speed Brakes - EXTEND.4. Thrust Reversers - BOTH DEPLOY. |
|--|

5. Reverser Indicator Lights - CHECK ILLUMINATION of ARM, UNLOCK and DEPLOY LIGHTS.
6. Thrust Reversers - REVERSE POWER ON BOTH ENGINES.

SPEED ABOVE V_1 - TAKEOFF SHOULD NORMALLY BE CONTINUED.

- | |
|---|
| <ol style="list-style-type: none">1. Emergency Stow Switch - EMER (affected engine).2. After establishing a positive rate-of-climb, Landing Gear - RETRACT. Do not exceed 125 KIAS until thrust reverser stows.3. At 400 feet, Flaps - RETRACT at $V_2 + 10$ and accelerate. Do not exceed 200 KIAS after thrust reverser stows. |
|---|

4. Land as soon as practical.

(Continued Next Page)

THRUST REVERSER INADVERTENT DEPLOYMENT DURING TAKEOFF

(Continued)

IF THRUST REVERSER WILL NOT STOW

5. Thrust Reverser Circuit Breaker - CHECK IN.
6. Throttle (affected engine) - CUTOFF.
7. Airspeed - Maintain 150 KIAS or below.
8. Refer to Abnormal Procedures, SINGLE-ENGINE APPROACH AND LANDING.

WARNING

**CAPABILITY OF A GO-AROUND WITH A THRUST REVERSER DEPLOYED
HAS NOT BEEN DEMONSTRATED.**

THRUST REVERSER INADVERTENT INFLIGHT DEPLOYMENT

1. Control Wheel/Autopilot - GRIP/DISENGAGE (airplane will tend to pitch up and roll into the deployed reverser).
 2. Emergency Stow Switch - EMER (affected engine).
 3. Throttle (affected engine) - CHECK IDLE.
 4. Airspeed - REDUCE TO 125 KIAS OR BELOW. AFTER THRUST REVERSER STOWS, DO NOT EXCEED 200 KIAS.
5. Reverser Indicator Lights - UNLOCK and DEPLOY LIGHT EXTINGUISHED.
- ARM LIGHT ILLUMINATED.
 6. Throttle (affected engine) - NORMAL OPERATION.
 7. Land as soon as practical. Refer to Normal Procedures, BEFORE LANDING.

IF THRUST REVERSER WILL NOT STOW

8. Thrust Reverser Circuit Breakers (LH Panel) - CHECK IN.

IF THRUST REVERSER STILL WILL NOT STOW

9. Throttle (affected engine) - OFF.
10. Airspeed - MAINTAIN 150 KIAS OR BELOW.
11. Land as soon as practical.
12. Refer to Abnormal Procedures, SINGLE ENGINE APPROACH AND LANDING.

WARNING

**CAPABILITY OF A GO-AROUND WITH A THRUST REVERSER DEPLOYED
HAS NOT BEEN DEMONSTRATED.**

THRUST REVERSER UNLOCK LIGHT ON IN FLIGHT

1. Emergency Stow Switch - EMER (affected engine).
2. Thrust Reverser Levers - CHECK THRUST REVERSER LEVERS AT STOWED (FULL FORWARD) POSITION.

IF LIGHT WILL NOT EXTINGUISH

3. Thrust Reverser Circuit Breaker - CHECK IN.
4. Maintain 200 KIAS or below.
5. Land as soon as practical.

THRUST REVERSER ARM LIGHT ON IN FLIGHT

1. Thrust Reverser Levers - CHECK STOWED (full forward).
2. Emergency Stow Switch - Verify NORM.

THRUST REVERSER ARM LIGHT ON INFLIGHT**IF LIGHT IS STILL ILLUMINATED**

3. Airspeed - Maintain 200 KIAS or Below.
4. HYD PRESS ON light - CHECK.

IF HYD PRESS ON LIGHT IS ILLUMINATED (THRUST REVERSER ISOLATION VALVE IS OPEN)

5. Affected Thrust Reverser Circuit Breaker - PULL.
6. Land As Soon As Possible (affected thrust reverser will be inoperative).

IF HYD PRESS ON LIGHT IS NOT ILLUMINATED

5. Land as soon as practical.

NOTE

With a thrust reverser circuit breaker pulled, the emergency stow system of the opposite reverser is deactivated.

AUTOPILOT MALFUNCTION

- | |
|---|
| 1. Autopilot/Trim Disengage Switch - PRESS. |
|---|

NOTE

The autopilot monitors normally detects failures and automatically disengages the autopilot.

NOTE

Maximum altitude losses during autopilot malfunction:

Cruise	400 Feet at 37,000 Feet.
Climb	0 Feet at 17,000 Feet.
ILS Approach	40 Feet. (Maximum deviation below glideslope during recovery from a failure at the critical fault point) Refer to Figure 3-2 for Glideslope Deviation Profile.

AUTOPILOT GLIDESLOPE DEVIATION PROFILE

CONDITIONS:

Airspeed - V_{REF}
Flaps - Land
Gear - Down
Corrective action initiated one second after
fault recognition.
Pilot's hands on control wheel and power
levers during the approach.

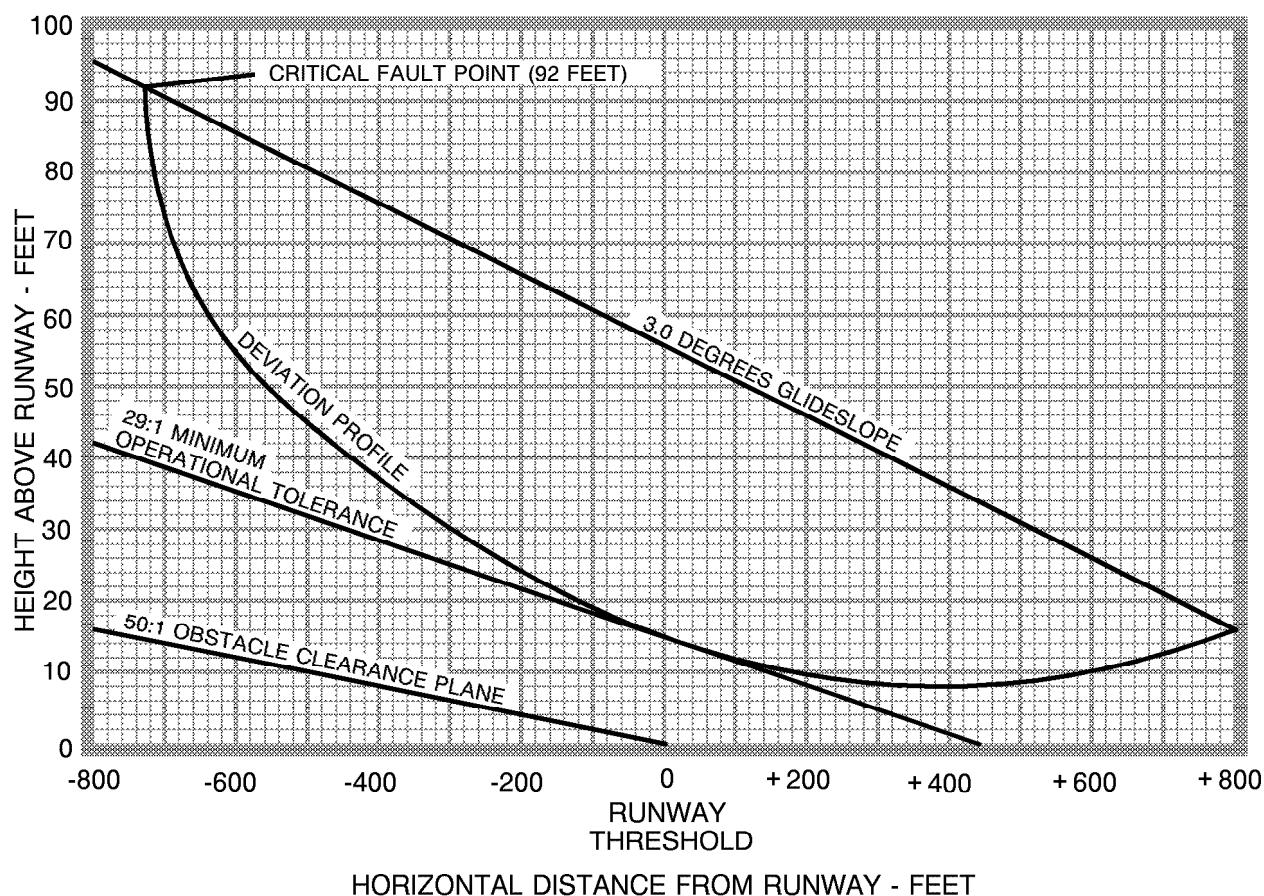


Figure 3-2

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EMERGENCY EVACUATION

- 1. Throttles - BOTH OFF.
- 2. LH/RH Engine Fire Switches - BOTH PRESS.
- 3. LH/RH Fire Bottle Armed Switches - BOTH PRESS (if fire suspected).
- 4. Battery Switch - OFF.
- 5. Airplane and Immediate Area - CHECK for BEST ESCAPE ROUTE.

IF THRU CABIN DOOR

- 6. Cabin Door - OPEN.
- 7. Move away from airplane.

IF THRU ESCAPE HATCH

- 6. Escape Hatch - REMOVE and THROW HATCH OUT of airplane.
- 7. Move away from airplane.

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ABNORMAL PROCEDURES

ENGINE START MALFUNCTION (ENGINE DOES NOT LIGHT)

1. Throttle - OFF.
2. Starter Disengage - PRESS 15 seconds after throttle OFF.

ENGINE STARTER WILL NOT DISENGAGE (LH OR RH START BUTTON LIGHT ON AFTER ENGINE START)

1. Starter Disengage Button - PRESS.

IF STARTER DOES NOT DISENGAGE AND START BUTTON LIGHT REMAINS ILLUMINATED (START RELAY STUCK)

2. External Power - CHECK CLEAR (if applicable).
3. Battery Switch - OFF.
4. Generator Switches - OFF.
5. Battery Quick Disconnect Connector - DISCONNECT (located in tailcone).
6. Throttle(s) - OFF.

HIGH SUSTAINED ITT DURING GROUND SHUTDOWN

1. Throttle - CHECK OFF.
2. Start Button - PRESS momentarily.
3. Starter Disengage - PRESS after 15 seconds.

LOW OIL PRESSURE (OIL PRESS WARN LH OR RH LIGHT ON)

ABOVE 60 PSI

1. Land as soon as practical.

BETWEEN 40 AND 60 PSI

1. Throttle (affected engine) - REDUCE POWER.
2. Land as soon as practical.

BELOW 40 PSI

1. Throttle (affected engine) - OFF.
2. Accomplish Emergency Procedures, ENGINE FAILURE/PRECAUTIONARY SHUTDOWN.

LOW OIL PRESSURE (OIL PRESS WARN LH OR RH LIGHT OFF)

BETWEEN 40 AND 60 PSI

1. Throttle (affected engine) - REDUCE POWER.

BELOW 40 PSI

1. Land as soon as practical.

LOW FUEL PRESSURE (FUEL LOW PRESS LH OR RH LIGHT ON)

1. Fuel Boost - ON (check boost pump circuit breakers in).
2. Fuel Quantity - CHECK.
3. Fuel Crossfeed - IF REQUIRED.

LOW FUEL QUANTITY (FUEL LOW LEVEL LH OR RH LIGHT ON)

The illumination of this light serves notice to the pilot that a minimum of 185 ±15 pounds of fuel remains in either tank.

1. Fuel Boost - ON (check boost pump circuit breakers in).
2. Fuel Crossfeed - AS REQUIRED.
3. Land as soon as practical.

FUEL BOOST PUMP ON (FUEL BOOST ON LH OR RH LIGHT ON)

Indicates that the respective fuel boost pump was either automatically or manually turned on.

1. Fuel Boost Switch (affected pump) - ON; then NORM. CHECK for FUEL LOW PRESS LIGHT to illuminate and extinguish.

If affected FUEL LOW PRESS light does not illuminate, leave the fuel boost switch in NORM with pump running.

FUEL FILTER BYPASS (FUEL FLTR BYPASS LH OR RH LIGHT ON)

1. Land as soon as practical - Consider possibility of partial or total loss of both engines thrust.
2. Inspect filter after landing.

SINGLE GENERATOR FAILURE (GEN OFF LH OR RH LIGHT ON)

1. Electrical Load - DECREASE if required.
2. Air Conditioner - OFF or FAN.
3. Failed Generator - CHECK SWITCHES and CIRCUIT BREAKERS; RESET AS REQUIRED.

IF UNABLE TO RESET

4. Failed Generator - OFF.

SINGLE INVERTER FAILURE (INVERTER FAIL 1 OR 2, AC FAIL, AND MASTER WARNING ON)

Indicates detection of a fault or loss of power from affected inverter.

1. Inverter Circuit Breaker (AC INVERTER NO. 1 on LH Panel or AC INVERTER NO. 2 on RH Panel) - CHECK IN.
2. INV1/INV2 Switch - MOMENTARILY SELECT OPERATING INVERTER, THEN NORM.

IF AFFECTED INVERTER RESETS (FAULT HAS CLEARED)

3. Flight Guidance System - RESET MODES AS APPLICABLE.
4. Master Warning - RESET and continue flight.

IF AFFECTED INVERTER WILL NOT RESET

3. INV1/INV2 Switch - SELECT OPERATING INVERTER.
4. Flight Guidance System - RESET MODES AS APPLICABLE.
5. Master Warning - RESET.

NOTE

Operation of all alternating current powered avionics equipment will be sustained by the opposite inverter. The autopilot and flight director may disengage. They may be re-engaged to operate on the remaining inverter.

6. Continue or land at pilot's discretion.

IF REMAINING INVERTER FAILS DURING SWITCHING PROCESS

7. Refer to Emergency Procedures, AC POWER FAILURE.

BLEED AIR GROUND (BLD AIR GND LIGHT ON)

Light must be out before takeoff.

IN FLIGHT

1. Pressurization Source Selector Switch - NORM.

ENVIRONMENTAL SYSTEM AIR DUCT OVERHEAT (AIR DUCT O'HEAT LIGHT ON)

1. TEMP Circuit Breaker - RESET.
2. Auto Temperature Select - MANUAL.
3. Manual Hot/Manual Cold Switch - MANUAL COLD; hold in this position until overheat light goes out (30 seconds maximum).

NOTE

High altitude operation (above 31,000 feet) in MANUAL (cold mode) could result in the air cycle machine overtemp and shutdown. Refer to Abnormal Procedures, AUTOMATIC CABIN TEMPERATURE CONTROLLER INOPERATIVE.

IF LIGHT GOES OUT

4. Auto Temperature Select - AUTO (select a cooler temperature)

NOTE

If the AIR DUCT O'HEAT light illuminates again, select MANUAL on Auto Temperature Selector and Control Temperature with the MANUAL HOT/MANUAL COLD Switch.

(Continued Next Page)

ENVIRONMENTAL SYSTEM AIR DUCT OVERHEAT (AIR DUCT O'HEAT LIGHT ON) (Continued)**IF LIGHT DOES NOT GO OUT**

4. Pressurization Source Selector - LH or RH; reduce power on selected engine, if necessary

AUTOMATIC CABIN TEMPERATURE CONTROLLER INOPERATIVE

1. Cabin Temperature Control - MANUAL.
2. MANUAL HOT/MANUAL COLD Switch - ENSURE NOT FULL COLD. Select full cold, at least 10 seconds then actuate at least 3 seconds toward HOT.

NOTE

Operation in manual mode, full cold, above 31,000 feet, particularly at low (climb) airspeed may result in air cycle machine overtemperature and shutdown. In the unlikely event that this should occur, refer to Abnormal Procedures, EMERGENCY PRESSURIZATION ON.

EMERGENCY PRESSURIZATION ON (AUTOMATIC ACTUATION) (EMERG PRESS ON LIGHT ON)

Indicates air cycle machine shutdown or failure.

1. NORM Pressurization Circuit Breaker - CHECK IN.
2. Temperature Control - ADJUST TO WARMER SETTING (may require manual mode).

NOTE

A time delay relay will lock the system into emergency pressurization if air cycle machine temperature remains too high for 12 seconds or more. If machine cools sufficiently in less than 12 seconds, the system will automatically return to the previously selected mode.

3. Pressurization Source Selector - EMER.

NOTE

Wait at least one minute after pressurization source selector has been positioned to EMER before making next selection.

4. Pressurization Source Selector - RH, LH or NORM.

IF EMERGENCY PRESSURIZATION REMAINS ON

5. Pressurization Source Selector - EMER.
6. Control cabin temperature with LH throttle.

SINGLE INVERTER FAILURE (INVERTER FAIL 1 OR 2 AND AC FAIL LIGHTS ON)

Indicates loss of power from affected inverter.

1. AC Inverter No. 1 and No. 2 Circuit Breakers - CHECK IN.
2. Master Warning - RESET and continue flight.

NOTE

Operation of all alternating current powered avionics equipment will be sustained by the opposite inverter. The flight director may disengage. It may be re-engaged to operate on the remaining inverter.

3. Continue or land at pilot's discretion.

BLEED AIR GROUND (BLD AIR GND LIGHT ON)

Light must be out before takeoff.

IN FLIGHT

1. Pressurization Source Selector Switch - NORM.

ENVIRONMENTAL SYSTEM AIR DUCT OVERHEAT (AIR DUCT O'HEAT LIGHT ON)

1. TEMP Circuit Breaker - RESET.
2. Auto Temperature Select - MANUAL.
3. Manual Hot/Manual Cold Switch - MANUAL COLD; hold in this position until overheat light goes out (30 seconds maximum).

NOTE

High altitude operation (above 31,000 feet) in MANUAL (cold mode) could result in the air cycle machine overtemp and shutdown. Refer to Abnormal Procedures, AUTOMATIC CABIN TEMPERATURE CONTROLLER INOPERATIVE.

IF LIGHT GOES OUT

4. Auto Temperature Select - AUTO (select a cooler temperature)

NOTE

If the AIR DUCT O'HEAT light illuminates again, select MANUAL on Auto Temperature Selector and Control Temperature with the MANUAL HOT/MANUAL COLD Switch.

(Continued Next Page)

ENVIRONMENTAL SYSTEM AIR DUCT OVERHEAT (AIR DUCT O'HEAT LIGHT ON) (Continued)

IF LIGHT DOES NOT GO OUT

4. Pressurization Source Selector - LH or RH; reduce power on selected engine, if necessary

AUTOMATIC CABIN TEMPERATURE CONTROLLER INOPERATIVE

1. Cabin Temperature Control - MANUAL.
2. MANUAL HOT/MANUAL COLD Switch - ENSURE NOT FULL COLD. Select full cold, at least 10 seconds then actuate at least 3 seconds toward HOT.

NOTE

Operation in manual mode, full cold, above 31,000 feet, particularly at low (climb) airspeed may result in air cycle machine overtemperature and shutdown. In the unlikely event that this should occur, refer to Abnormal Procedures, EMERGENCY PRESSURIZATION ON.

EMERGENCY PRESSURIZATION ON (AUTOMATIC ACTUATION) (EMERG PRESS ON LIGHT ON)

Indicates air cycle machine shutdown or failure.

1. NORM Pressurization Circuit Breaker - CHECK IN.
2. Temperature Control - ADJUST TO WARMER SETTING (may require manual mode).

NOTE

A time delay relay will lock the system into emergency pressurization if air cycle machine temperature remains too high for 12 seconds or more. If machine cools sufficiently in less than 12 seconds, the system will automatically return to the previously selected mode.

3. Pressurization Source Selector - EMER.

NOTE

Wait at least one minute after pressurization source selector has been positioned to EMER before making next selection.

4. Pressurization Source Selector - RH, LH or NORM.

IF EMERGENCY PRESSURIZATION REMAINS ON

5. Pressurization Source Selector - EMER.
6. Control cabin temperature with LH throttle.

CABIN ALTITUDE ABOVE SELECTED ALTITUDE

1. Cabin Altitude Selector - SET to lower cabin altitude.
2. Rate Control - FULL INCREASE.
3. Pressurization Source selector - EMER.

IF NOT ARRESTED BY 14,000 FEET CABIN ALTITUDE

4. Oxygen Masks - DON and 100% oxygen.
5. Emergency Descent - AS REQUIRED.
6. Passenger Oxygen - ENSURE passengers are receiving oxygen.
7. Oxygen Microphone Switches - MIC OXY MASK.
8. Transponder - EMERGENCY.

AIR CYCLE MACHINE (ACM) OVERPRESSURE (ACM O'PRESS LIGHT ON)**ON THE GROUND**

1. Do not fly the airplane until the malfunction has been repaired.

IN FLIGHT

1. Pressurization Source Selector - RH, reduce power on right engine to 80% N₂.
2. EMER PRESS Circuit Breaker - PULL.
3. NORM PRESS Circuit Breaker - PULL and RESET.
4. EMER PRESS Circuit Breaker - RESET.

NOTE

If ACM O'PRESS light remains on, operate the right engine below 80% N₂.
Operate left engine normally.

VACUUM SYSTEM FAILURE**NOTE**

EMER DUMP valve will be inoperative. Cabin will go to maximum differential pressure.

1. Pressurization Source Selector - RH or LH, (reduce power to 70% N₁ RPM on selected side).
2. Pressurization Source Selector - OFF before landing.

ELECTRIC ELEVATOR RUNAWAY TRIM

1. Autopilot/Trim Disengage Switch - PRESS and RELEASE.
2. PITCH TRIM circuit breaker - PULL.
3. Manual Elevator Trim - AS REQUIRED.

ELECTRIC TRIM INOPERATIVE

1. Electric Trim Circuit Breaker (PITCH TRIM) - CHECK CIRCUIT BREAKER IN.

IF STILL INOPERATIVE

2. Manual Elevator Trim - AS REQUIRED.

NOTE

Do not attempt to use the autopilot if the electric trim is inoperative. The autopilot will not be able to trim out servo torque, and disengaging the autopilot could result in a significant pitch upset.

JAMMED ELEVATOR TRIM TAB

CRUISE

1. Maintain trim speed as long as practical. Do not extend flaps for approach or landing. Refer to Abnormal Procedures, FLAPS INOPERATIVE APPROACH and LANDING.

TAKEOFF OR GO-AROUND

1. Reduce power as necessary to maintain 120 KIAS or less. Do not change flap position. Minimum speed is V_{REF} for FULL flaps, V_{APP} for 15° flaps or $V_{REF} +15$ KIAS for 7° or 0° flaps. Do not retract landing gear. Land as soon as practical.

NOTE

Do not attempt to use the autopilot if the electric trim is inoperative. The autopilot will not be able to trim out servo torque, and disengaging the autopilot could result in a significant pitch upset.

ENGINE ANTI-ICE FAILURE (ENG ANTI-ICE LH OR RH LIGHT ON)

IN FLIGHT (Steady Illumination)

1. Throttle - INCREASE POWER.
2. Engine Anti-Ice Controls - CHECK SWITCHES and CIRCUIT BREAKERS.

IF ENGINE ANTI-ICE LIGHT REMAINS ON (AFTER TWO MINUTES)

3. Leave icing environment.

NOTE

The CROSSFEED (XFD) position of the Engine Anti-Ice Switch is designed to provide wing anti-ice protection to both wings in the event of an inoperative engine. Crossfeed (XFD) disables the selected inlet temperature and starter valve inputs to the anti-ice failure annunciators.

WING BLEED AIR OVERHEAT (WING O'HEAT LH OR RH LIGHT ON)**CONTINUOUS ILLUMINATION**

1. Affected Wing - DECREASE POWER (affected engine).

IF LIGHT DOES NOT EXTINGUISH

2. Leave icing environment.
3. Engine Anti-Ice Switch - OFF.

WINDSHIELD BLEED AIR FAILURE**LOSS OF HOT AIR SUPPLY (VALVE WILL NOT OPEN OR POSSIBLE LINE FAILURE)**

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment as soon as possible.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD AIR OVERHEAT (W/S AIR O'HEAT LIGHT ON)**WINDSHIELD BLEED SWITCH LOW OR HI (AIR FLOW CYCLES OFF AND ON)****MOMENTARY ILLUMINATION**

1. If Windshield Bleed Air Switch is HI - SELECT LOW.
2. Windshield Bleed Air Valves - REDUCE.

CONTINUOUS ILLUMINATION (AIRFLOW STOPS, PROBABLE CONTROLLER FAILURE).

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD BLEED SWITCH OFF**W/S AIR O'HEAT LIGHT ON MOMENTARY OR CONTINUOUS**

Indicates probable solenoid valve failure or leak. Windshield air temperature is not regulated. Windshield heat damage is possible. Maintenance is required.

1. Windshield Bleed Air Manual Valves - CLOSE.

PITOT-STATIC HEATER FAILURE (P/S HTR OFF, LH, RH, OR STBY P/S HTR OFF LIGHT MAY BE ON)

1. Pitot-Static Switch and Circuit Breakers - CHECK.
2. Determine Inoperative System.

NOTE

The autopilot references the pilot's (LH) or co-pilot's (RH) pitot-static system; therefore, the altitude hold and speed hold functions may be inoperative if the coupled side pitot-static system fails in icing conditions. Autopilot may be transferred to operative side.

ANGLE-OF-ATTACK PROBE HEATER FAILURE (AOA HTR FAIL LIGHT ON)

Indicates that the angle of attack probe heating element has failed.

1. Pitot-Static Switch and AOA HTR Circuit Breaker - CHECK.
2. Leave icing environment.

NOTE

If the AOA probe heater fails and the AOA probe becomes iced, the stick shaker may not function.

PFD ATTITUDE FAILURE - SINGLE (ATT FAIL ANNUNCIATOR ILLUMINATED)

1. ATT REV Button - PUSH (applicable display). Verify that amber ATT2 or ATT1 is displayed in pilot's and copilot's PFD.

PFD HEADING FAILURE - SINGLE (HDG ANNUNCIATOR ILLUMINATED)

1. HDG REV Button - PUSH (applicable display). Verify that amber MAG2 or MAG1 is displayed in pilot's and copilot's PFD.

NOTE

The HDG REV button may require more than one push to select heading reversion mode. Reversion is verified by observing an amber MAG1 or MAG2, as appropriate, in each PFD.

AIR DATA COMPUTER FAILURE - SINGLE (ADC ANNUNCIATOR ILLUMINATED)

1. ADC Button - PUSH (applicable display). Verify that amber, ADC2 or ADC1 is displayed in pilot's and copilot's PFD.

WING BLEED AIR OVERHEAT (WING O'HEAT LH OR RH LIGHT ON)**CONTINUOUS ILLUMINATION**

1. Affected Wing - DECREASE POWER (affected engine).

IF LIGHT DOES NOT EXTINGUISH

2. Leave icing environment.
3. Engine Anti-Ice Switch - OFF.

WINDSHIELD BLEED AIR FAILURE**LOSS OF HOT AIR SUPPLY (VALVE WILL NOT OPEN OR POSSIBLE LINE FAILURE)**

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment as soon as possible.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD AIR OVERHEAT (W/S AIR O'HEAT LIGHT ON)**WINDSHIELD BLEED SWITCH LOW OR HI (AIR FLOW CYCLES OFF AND ON)****MOMENTARY ILLUMINATION**

1. If Windshield Bleed Air Switch is HI - SELECT LOW.
2. Windshield Bleed Air Valves - REDUCE.

CONTINUOUS ILLUMINATION (AIRFLOW STOPS, PROBABLE CONTROLLER FAILURE).

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD BLEED SWITCH OFF**W/S AIR O'HEAT LIGHT ON MOMENTARY OR CONTINUOUS**

Indicates probable solenoid valve failure or leak. Windshield air temperature is not regulated. Windshield heat damage is possible. Maintenance is required.

1. Windshield Bleed Air Manual Valves - CLOSE.

PITOT-STATIC HEATER FAILURE (P/S HTR OFF, LH, RH, OR STBY P/S HTR OFF LIGHT MAY BE ON)

1. Pitot-Static Switch and Circuit Breakers - CHECK.
2. Determine Inoperative System.

NOTE

The autopilot references the pilot's (LH) or co-pilot's (RH) pitot-static system; therefore, the altitude hold and speed hold functions may be inoperative if the coupled side pitot-static system fails in icing conditions. Autopilot may be transferred to operative side.

ANGLE-OF-ATTACK PROBE HEATER FAILURE (AOA HTR FAIL LIGHT ON)

Indicates that the angle of attack probe heating element has failed.

1. Pitot-Static Switch and AOA HTR Circuit Breaker - CHECK.
2. Leave icing environment.

NOTE

If the AOA probe heater fails and the AOA probe becomes iced, the stick shaker may not function.

PFD ATTITUDE FAILURE - SINGLE (ATT FAIL ANNUNCIATOR ILLUMINATED)

1. ATT REV Button - PUSH (applicable display). Verify that amber ATT2 or ATT1 is displayed in pilot's and copilot's PFD.

PFD HEADING FAILURE - SINGLE (HDG ANNUNCIATOR ILLUMINATED)

1. HDG REV Button - PUSH (applicable display). Verify that amber MAG2 or MAG1 is displayed in pilot's and copilot's PFD.

AIR DATA COMPUTER FAILURE - SINGLE (ADC ANNUNCIATOR ILLUMINATED)

1. ADC Button - PUSH (applicable display). Verify that amber, ADC2 or ADC1 is displayed in pilot's and copilot's PFD.

WING BLEED AIR OVERHEAT (WING O'HEAT LH OR RH LIGHT ON)**CONTINUOUS ILLUMINATION**

1. Affected Wing - DECREASE POWER (affected engine).

IF LIGHT DOES NOT EXTINGUISH

2. Leave icing environment.
3. Engine Anti-Ice Switch - OFF.

WINDSHIELD BLEED AIR FAILURE**LOSS OF HOT AIR SUPPLY (VALVE WILL NOT OPEN OR POSSIBLE LINE FAILURE)**

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment as soon as possible.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD AIR OVERHEAT (W/S AIR O'HEAT LIGHT ON)**WINDSHIELD BLEED SWITCH LOW OR HI (AIR FLOW CYCLES OFF AND ON)****MOMENTARY ILLUMINATION**

1. If Windshield Bleed Air Switch is HI - SELECT LOW.
2. Windshield Bleed Air Valves - REDUCE.

CONTINUOUS ILLUMINATION (AIRFLOW STOPS, PROBABLE CONTROLLER FAILURE).

1. Windshield Bleed Air Switch and Valves - OFF.
2. Windshield Alcohol Anti-Ice - AS REQUIRED.
3. Leave icing environment.

NOTE

10 minutes alcohol available to pilot's windshield only.

WINDSHIELD BLEED SWITCH OFF**W/S AIR O'HEAT LIGHT ON MOMENTARY OR CONTINUOUS**

Indicates probable solenoid valve failure or leak. Windshield air temperature is not regulated. Windshield heat damage is possible. Maintenance is required.

1. Windshield Bleed Air Manual Valves - CLOSE.

PITOT-STATIC HEATER FAILURE (P/S HTR OFF, LH, RH, OR STBY P/S HTR OFF LIGHT MAY BE ON)

1. Pitot-Static Switch and Circuit Breakers - CHECK.
2. Determine Inoperative System.

NOTE

The autopilot references the pilot's (LH) or co-pilot's (RH) pitot-static system; therefore, the altitude hold and speed hold functions may be inoperative if the coupled side pitot-static system fails in icing conditions. Autopilot may be transferred to operative side.

ANGLE-OF-ATTACK PROBE HEATER FAILURE (AOA HTR FAIL LIGHT ON)

Indicates that the angle of attack probe heating element has failed.

1. Pitot-Static Switch and AOA HTR Circuit Breaker - CHECK.
2. Leave icing environment.

NOTE

If the AOA probe heater fails and the AOA probe becomes iced, the stick shaker may not function.

PFD ATTITUDE FAILURE - SINGLE (ATT FAIL ANNUNCIATOR ILLUMINATED)

1. ATT REV Button - PUSH (applicable display). Verify that amber ATT2 or ATT1 is displayed in pilot's and copilot's PFD.

PFD HEADING FAILURE - SINGLE (HDG ANNUNCIATOR ILLUMINATED)

1. HDG REV Button - PUSH (applicable display). Verify that amber MAG2 or MAG1 is displayed in pilot's and copilot's PFD.

NOTE

The HDG REV button may require more than one push to select heading reversion mode. Reversion is verified by observing an amber MAG1 or MAG2, as appropriate, in each PFD.

AIR DATA COMPUTER FAILURE - SINGLE (ADC ANNUNCIATOR ILLUMINATED)

1. ADC Button - PUSH (applicable display). Verify that amber, ADC2 or ADC1 is displayed in pilot's and copilot's PFD.

COMPARISON MONITOR ALERT (PFD ANNUNCIATOR ILLUMINATED)

Indicates one or more of the following parameters has exceeded its predetermined tolerance level:

PFD ANNUNCIATOR	PARAMETER
PIT	Pitch Attitude
ROL	Roll Attitude
HDG	Heading
LOC	Localizer
ATT	Roll and Pitch Attitude
GS	Glideslope
ILS	Glideslope and Localizer
IAS	Airspeed
ALT	Altitude
RA	Radio Altitude

1. Autopilot/trim disengage Switch - PRESS.

NOTE

The autopilot must remain OFF.

SYMBOL GENERATOR FAILURE - SINGLE (RED “X” OR BLANK PFD)

1. MFD Controller Mode Select Knob - SELECT opposite side symbol generator (either SG1 or SG2).
2. PFD display - VERIFY amber SG1 or SG2 (as appropriate) annunciated in both PFDs.

NOTE

The reversion side mode select panel will be inoperative. FD modes and autopilot coupling (if desired) must be selected from non-reversion side only.

PRIMARY FLIGHT DISPLAY FAILURE (PILOT’S OR COPILOT’S TUBE BLANK)**ON GROUND****NOTE**

A failed display unit in either pilot’s or co-pilot’s PFD position may be interchanged with the MFD display unit to allow dispatch with two functioning PFDs. Access to the removal screw is gained by removing the lower bezels.

(Continued next page)

PRIMARY FLIGHT DISPLAY FAILURE (PILOT'S OR COPILOT'S TUBE BLANK) (Continued)

CAUTION

WHEN THE MFD DISPLAY UNIT IS INOPERATIVE, THE FOLLOWING AVIONICS EQUIPMENT WILL NOT BE AVAILABLE:

- TAKEOFF V SPEED DISPLAY
- LANDING V SPEED DISPLAY
- HONEYWELL VNAV
- TCAS DISPLAY (OPTIONAL)

IN FLIGHT

1. Dim Button (applicable display) - OFF.

NOTE

Turning off the applicable DIM knob on the DC-550 display controller will cause the PFD information to be displayed on the MFD.

PRIMARY FLIGHT DISPLAY OR MULTIFUNCTION DISPLAY FAN FAILURE (PFD FAN or MFD FAN LIGHT ON)

ILLUMINATION ON GROUND

Indicates failure of the pilot's or copilot's PFD or MFD cooling fan.

1. Ground Operating Time - DO NOT EXCEED 10 MINUTES.

IF GROUND OPERATING TIME EXCEEDS 10 MINUTES

2. Circuit Breakers (RH Panel) - PULL PFD 1, PFD 2, EFIS CONTL 1, EFIS CONTL 2, and/or MFD CONTL (as appropriate).

CAUTION

ELECTRICAL POWER MUST BE REMOVED FROM EFIS SYSTEM TO PREVENT OVERHEATING DURING GROUND OPERATIONS.

3. Prior to takeoff - RESET CIRCUIT BREAKERS PFD1, PFD2, EFIS1, EFIS2 and/or MFD (as appropriate).
4. PFD's or MFD Hot Annunciators - MONITOR.
5. Return to normal procedures.

ILLUMINATION IN FLIGHT

Indicates failure of the pilot's or copilot's PFD or MFD cooling fan.

1. PFD's or MFD Hot Annunciators - MONITOR.

**PRIMARY FLIGHT DISPLAY OR MULTIFUNCTION DISPLAY
OVERTEMPERATURE (PFD HOT OR MFD HOT LIGHT ON)****ILLUMINATION IN FLIGHT**

The HOT light has probable illumination due to an overtemperature condition caused by failure of the internal fan. Continued use of the display without the fan may lead to display failure. Removing power from the display will allow it to cool, but restoring power will likely result in another overtemperature indication. Consideration should be given to leaving the circuit breaker disengaged, using the opposite side PFD or PFD reversion to MFD (as appropriate) to complete the flight and, if necessary, restoring power to the display for the approach and landing. Pulling the PFD1 or PFD2 or MFD circuit breakers (as appropriate) will enable the display tubes to cool.

1. Cockpit Temperature - Select MANUAL COLD or AUTOMATIC COLD above 31,000 feet.
2. Dim and Raster Dim - REDUCE BRIGHTNESS to a minimum level on affected display.

IF OVERTEMPERATURE ANNUNCIATION PERSISTS

3. PFD or MFD Circuit breakers - PULL.
4. Dim Knob (affected PFD display) - OFF operate on reversionary mode as applicable.

NOTE

If pilot or copilot's PFD is the affected display, the output of the applicable DGC may be displayed on the MFD by turning the dim knob on the affected PFD controller to OFF.

5. Land as soon as practical.

ON GROUND

1. Determine cause prior to flight.

**DISPLAY GUIDANCE COMPUTER COOLING FAN FAILURE (IC1 OR IC2
FAN LIGHT ON)****ILLUMINATED ON THE GROUND**

Indicates failure of the display guidance computer cooling fan.

1. Ground Operating Time - DO NOT EXCEED 10 MINUTES.

IF GROUND OPERATING TIME EXCEEDS 10 MINUTES

2. Circuit Breakers (RH Panel) - PULL PFD1, PFD2, and/or MFD (as appropriate).

CAUTION

ELECTRICAL POWER MUST BE REMOVED FROM EFIS SYSTEM TO PREVENT OVERHEATING DURING GROUND OPERATIONS.

(Continued next page)

DISPLAY GUIDANCE COMPUTER COOLING FAN FAILURE (IC1 OR IC2 FAN LIGHT ON) (Continued).

3. Prior to takeoff - RESET CIRCUIT BREAKERS PFD1, PFD2, and/or MFD (as appropriate).
4. IC1 and IC2 Hot Annunciators - MONITOR.
5. Return to normal procedures.

ILLUMINATION IN FLIGHT

Indicates failure of the display guidance computer cooling fan.

1. IC1 and IC2 Hot Annunciators - MONITOR.

AUTOPILOT OUT OF TRIM (AP ROLL OR AP PITCH MISTRIM ANNUNCIATOR ILLUMINATED)

1. Autopilot Disconnect Button - PRESS.

CAUTION

BE PREPARED FOR MINOR CONTROL WHEEL FORCE REQUIRED TO MAINTAIN DESIRED FLIGHT PATH.

2. Elevator or aileron trim wheels - ADJUST as required.
3. Autopilot Button - ENGAGE as desired.

DISPLAY GUIDANCE COMPUTER OVERTEMPERATURE (IC1 OR IC2 HOT LIGHT ON)

ILLUMINATION IN FLIGHT

The HOT light has probably illuminated due to an overtemperature condition caused by failure of the internal fan. Continued use of the guidance computer without the fan may lead to computer failure. Removing power from the computer will allow it to cool, but restoring power will likely result in another overtemperature indication. Consideration should be given to leaving the circuit breaker disengaged using the opposite side computer for the approach and landing. Pulling the DGC1 or DGC2 circuit breakers (as appropriate) will enable the computer to cool.

1. DGC1 or DGC2 Circuit Breaker - PULL.
2. Land as soon as practical.

NOTE

The output of the unaffected display guidance computer may be used to drive all three displays by placing the SG reversion knob located on the MFD controller to SG1 or SG2 as appropriate.

ON GROUND

1. Determine cause prior to flight.

LOSS OF TAS INPUT TO FLIGHT GUIDANCE SYSTEM

1. Failure Side - DETERMINE.

NOTE

- Failure of TAS input to the pilot's side will generate a 'TAS FAIL' message from FMS as well as blanking the displayed value of TAS on the MFD. Failure of TAS input to the co-pilot's side will not result in any message annunciation.
 - Autopilot performance when coupled to the side with a failed TAS input will be significantly degraded in other than approach phases of flight.
2. SG Reversion Knob - SG1 or SG2. (Revert to cross side symbol generator with operable TAS input).

NOTE

Autopilot must be coupled to side consistent with selected symbol generator.

NOSE AVIONIC FAN FAILURE (NOSE AVN FAN FAIL ANNUNCIATOR ILLUMINATED)**ON GROUND**

1. Ground Operating Time - LIMIT TO 30 MINUTES.

IN FLIGHT

1. Flight may be continued in a normal manner.

LANDING GEAR WILL NOT EXTEND

1. Landing Gear Handle - CHECK DOWN (airspeed below 200 KIAS).
2. Gear Control Circuit Breaker - CHECK IN.
3. Auxiliary Gear Control - PULL T-HANDLE and ROTATE TO LOCK.
4. Rudder - YAW AIRPLANE if necessary to achieve downlock light.

CAUTION

IF DOWNLOCK LIGHTS DO NOT ILLUMINATE, ASSURE VISUALLY IF POSSIBLE THAT ALL LANDING GEARS HAVE BEEN RELEASED FROM THE UPLOCKS PRIOR TO USING THE BLOWDOWN SYSTEM. THE BLOWDOWN WILL NOT REMOVE THE GEAR FROM THE UPLOCKS.

5. Auxiliary Gear Control - PULL KNOB TO BLOW DOWN (for positive lock).

NOTE

Pneumatic pressure should be used to assure positive locking of all three gear actuators.

LOW HYDRAULIC FLOW (HYD FLOW LOW LH OR RH LIGHT ON)

- Indicates inoperative left or right hydraulic pump.

ANTISKID SYSTEM FAILURE (ANTISKID INOP LIGHT ON, POWER BRAKE LOW PRESS LIGHT OUT)

1. Antiskid Switch - ON.
2. Skid Control Circuit Breaker - RESET.

IF LIGHT REMAINS ON

3. Antiskid Switch - OFF.
4. Multiply landing distance of Figure 4-35 by 1.25.

CAUTION

DIFFERENTIAL POWER BRAKING IS AVAILABLE. HOWEVER, SINCE THE ANTISKID IS INOPERATIVE, EXCESSIVE PRESSURE ON THE BRAKE PEDALS MAY CAUSE WHEEL BRAKES TO LOCK, RESULTING IN TIRE BLOWOUT.

5. Be prepared to use the emergency brake system.

NOTE

If the antiskid hydraulic pump fails after the accumulator pressure exceeds 750 psi, the POWER BRAKE LOW PRESS light may not illuminate until normal brakes are used.

HYDRAULIC SYSTEM REMAINS PRESSURIZED (HYD PRESS ON LIGHT REMAINS ON AFTER SYSTEM CYCLE IS COMPLETED)

1. Speed Brakes Control Circuit Breaker - PULL.
2. Landing Gear Control Circuit Breaker - PULL.
3. Flaps Control Circuit Breaker - PULL.
4. Thrust Reverser Circuit Breakers - PULL (one at a time).

IF SYSTEM DEPRESSURIZED

5. Circuit Breakers - RESET (one at a time). Leave pulled circuit breaker which caused system to depressurize.
6. Land as soon as practical. Reset Speed Brakes Control, Landing Gear, or Flaps (not thrust reverser) Circuit Breakers prior to landing, if pulled.

IF SYSTEM REMAINS PRESSURIZED (Indicates bypass valve failed)

5. Control Circuit Breakers - RESET (one at a time).
6. Land as soon as possible. If system bypass valve fails, the hydraulic system may overheat.

BAGGAGE DOOR NOT LOCKED (BAGGAGE DOOR LH OR RH ANNUNCIATOR ILLUMINATED)

Indicates unlocked/unlatched (key) nose baggage door (LH or RH).

ON GROUND

1. Correct condition prior to flight.

IN FLIGHT

1. Airspeed - REDUCE.
2. Passenger Advisory Light - PASS SAFETY.

CABIN DOOR NOT LOCKED (CABIN DOOR ANNUNCIATOR ILLUMINATED)

Indicates failure or improper position of door switch and/or possible disengagement of the lower forward cabin door pin.

ON THE GROUND

1. Correct condition prior to flight.

IN FLIGHT

1. Cabin Altitude - SELECT to 9500 feet.
2. Airspeed - REDUCE.
3. Passenger Advisory Light - PASS SAFETY.
4. Cabin Door - KEEP CLEAR.
5. Altitude - DESCEND to a lower altitude.
6. Land as soon as practical.

TAILCONE DOOR NOT LOCKED (TAILCONE DOOR ANNUNCIATOR ILLUMINATED)

Indicates unlocked/unlatched (key) tailcone baggage door.

ON THE GROUND

1. Correct condition prior to flight.

IN FLIGHT

1. Airspeed - REDUCE.
2. Passenger Advisory Light - PASS SAFETY.

CABIN DOOR PRESSURE SEAL FAILURE (DOOR SEAL ANNUNCIATOR ILLUMINATED)**DOOR SEAL LIGHT ON IN FLIGHT**

1. Descend to 41,000 feet (or lower).
2. Pilot - DON CREW OXYGEN MASK.
3. Passenger Advisory Light - PASS SAFETY.
4. Land as soon as practical.

LOW HYDRAULIC FLUID LEVEL (HYD LOW LEVEL LIGHT ON)

1. Land as soon as practical.

NOTE

The speed brakes, thrust reversers and flaps may not operate. If the flaps lever is moved, the flaps may tend to float in a trail position. The landing gear may not operate using normal procedures.

POWER BRAKE SYSTEM FAILURE (POWER BRAKE LOW PRESS AND ANTISKID INOP LIGHTS ON)

1. Skid Control Circuit Breaker - RESET.

IF LIGHT REMAINS ON

2. Plan to use the emergency brake system for landing.
3. Brake Pedals - REMOVE FEET FROM BRAKE PEDALS.
4. Emergency Brake Handle - PULL as required.

CAUTION

ANTISKID SYSTEM DOES NOT FUNCTION DURING EMERGENCY BRAKING. EXCESSIVE PRESSURE ON EMERGENCY BRAKE HANDLE CAN CAUSE BOTH WHEEL BRAKES TO LOCK, RESULTING IN BLOWOUT OF BOTH TIRES.

5. Multiply the landing distance of Figure 4-35 by 1.3.

WHEEL BRAKE FAILURE

1. Brake Pedals - REMOVE FEET from BRAKE PEDALS.
2. Emergency Brake Handle - PULL as required.

CAUTION

ANTISKID SYSTEM DOES NOT FUNCTION DURING EMERGENCY BRAKING. EXCESSIVE PRESSURE ON EMERGENCY BRAKE HANDLE CAN CAUSE BOTH WHEEL BRAKES TO LOCK, RESULTING IN BLOWOUT OF BOTH TIRES.

3. Multiply the landing distance of Figure 4-35 by 1.3.

SINGLE-ENGINE REVERSING

1. Throttles - IDLE.
2. Brakes - APPLY.
3. Speed Brakes - EXTEND.
4. Thrust Reverser - DEPLOY (after nose wheel on ground).
5. Reverser Indicator Lights - CHECK ILLUMINATION of ARM, UNLOCK and DEPLOY LIGHTS.
6. Reverser Power - AS REQUIRED.
7. Thrust Reverser - REVERSER LEVER TO IDLE REVERSE AT 60 KIAS.

NOTE

Reverse thrust may need to be reduced during crosswind landings on wet or icy runways.

SINGLE-ENGINE APPROACH AND LANDING

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK and SET.
3. Radar Altimeter - SET.
4. V_{REF} and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
7. Flaps - TAKEOFF and APPROACH.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM; unless ground icing anticipated - HIGH.
10. Fuel Crossfeed - CHECK.
11. Ignition (operating engine) - ON.
12. Landing Gear - DOWN and LOCKED.
13. Antiskid - CHECK ON.
14. Landing Lights - ON.
15. Airspeed - V_{APP} Minimum.
16. Autopilot and Yaw Damper - OFF.
17. Pressurization - CHECK ZERO DIFFERENTIAL.
18. Speed Brakes - RETRACTED.
19. Flaps - LAND (when landing assured).
20. Airspeed - V_{REF} .

NOTE

Do not allow N_2 (turbine) RPM to be less than 52%.

GROUND IDLE (GROUND IDLE LIGHT ON IN FLIGHT)

Indicates fuel control is in ground idle mode (46% N_2 turbine RPM). Do not set N_2 turbine RPM below 52% (flight idle). Engine acceleration from ground idle (46% N_2 turbine RPM) may be slow.

IN FLIGHT

1. Ground Idle Switch - HIGH.
2. Engine Synchronizer - OFF.

AFTER LANDING

1. Ground Idle Switch - NORM.

SINGLE-ENGINE GO-AROUND

1. Throttle (operating engine) - TAKEOFF POWER
2. Airplane Pitch Attitude - 10° (Go-around mode on flight director for reference).
3. Flaps - TAKEOFF and APPROACH.

NOTE

The landing gear warning horn can not be silenced if the landing gear is retracted prior to the flaps reaching the TAKEOFF and APPROACH position.

4. Climb Speed - V_{APP} Minimum.
5. Landing Gear - UP (when positive rate-of-climb is established).
6. Flaps (when clear of obstacle) - RETRACT at 400 feet.
7. Climb Speed - V_{ENR} .
8. Thrust - Maximum continuous power.

FLAPS INOPERATIVE APPROACH AND LANDING (NOT IN LANDING POSITION)

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. V_{REF} and fan Speed Settings - CONFIRM.
3. Airspeed - Flaps 15° , $V_{REF} + 5$ KIAS.
Flaps 7° , $V_{REF} + 10$ KIAS.
Flaps 0° or unknown, $V_{REF} + 15$ KIAS.
4. Flaps Control Circuit Breaker - CHECK IN.
5. Multiply the landing distance of Figure 4-35 by 1.2.
6. Avionics and Flight Instruments - CHECK and SET.
7. Radar Altimeter - SET.
8. Passenger Advisory Lights - PASS SAFETY.
9. Passenger seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
10. Engine Synchronizer - OFF.
11. Fuel Crossfeed - OFF.
12. Ignition - ON.
13. Landing Gear - DOWN and LOCKED.
14. Antiskid - CHECK ON.
15. Landing Lights - ON.
16. Autopilot and Yaw Damper - OFF.
17. Annunciator Panel - CLEAR.
18. Pressurization - CHECK ZERO DIFFERENTIAL.
19. Speed Brakes - RETRACTED PRIOR TO 50 FEET.

NOTE

Do not allow N_2 (turbine) RPM to be less than 52%.

FIREWALL SHUTOFF VALVE (F/W SHUTOFF LH OR RH LIGHT ON)

Operated by engine fire push switches. The respective fuel and hydraulic systems shutoff valves are closed at the applicable firewall and the same side generator field relay is tripped.

ANGLE-OF-ATTACK SYSTEM FAILURE (AMBER AOA ANNUNCIATION IN PFD)

Indicates that a failure exists in the angle of attack and/or stick shaker system which has caused the AOA annunciator to flag. The Stick Shaker may be inoperative. Low speed awareness cues in the PFD will be inoperative.

USE OF SUPPLEMENTAL OXYGEN (UNPRESSURIZED)

- 1. Oxygen Masks - NORMAL below 25,000 feet cabin altitude.
 - 100% at or above 25,000 feet.
 - Ensure crew and passengers are receiving oxygen.
- 2. Cabin Altitude - MAX 25,000 FEET with passengers.
 - MAX 37,000 FEET crew only.
- 3. Oxygen - CHECK ENDURANCE (refer to Figure 3-3).
- 4. Range - COMPUTE, (based on oxygen endurance and revised fuel flow and ground speed).

MASTER WARNING LIGHT ON STEADY

- 1. Warning Light Circuit Breaker - CHECK.
- 2. Instruments (hydraulic, electrical and engine) - MONITOR.

MASTER WARNING LIGHT ON STEADY OR FLASHING, NO WARNING LIGHTS ILLUMINATED

- 1. Master Warning - PRESS to reset.
- 2. Warning Light Circuit Breaker - CHECK.
- 3. Instruments (electrical and engine) - MONITOR.

SPEED BRAKES (SPD BRK EXTEND ADVISORY LIGHT ON)

Normal indication if speed brakes are extended.

IF SPEED BRAKES FAIL TO STOW

- 1. Speed Brake Circuit Breaker (LH Panel) - PULL.
- 2. Speed Brake Position - VERIFY visually that speed brakes have blown back to a near flush position.

LANDING WITH FAILED PRIMARY FLIGHT CONTROL CABLE

RUDDER

1. Utilize rudder trim.
2. After touchdown, lower the nose and deploy speed brakes as soon as possible.

NOTE

Use of thrust reversers during landing rollout is not recommended.

AILERON

1. Use rudder for directional control limiting bank angle to 15 degrees maximum. Do not use aileron trim except for gross adjustments.
2. If possible, choose a runway with least possible crosswind.
3. After touchdown, lower the nose and extend speed brakes as soon as possible.

ELEVATOR

1. Use manual elevator trim wheel for primary pitch control. Do not use electric trim.
2. Make small pitch and power changes and set up landing configuration early.
3. After touchdown and nose wheel on ground, extend speed brakes and apply wheel brakes as soon as possible.

WARNING

DO NOT DEPLOY THRUST REVERSERS DURING LANDING ROLLOUT.

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NORMAL PROCEDURES

PREFLIGHT INSPECTION

1. Battery - CONNECTED.
2. Engine Covers - REMOVED (2 each).
3. Pitot Covers - REMOVED (3 each).

PRELIMINARY COCKPIT INSPECTION

NOTE

Prior to cockpit inspection, check tailcone to ensure battery is connected.

1. Documents - CHECK ABOARD.
 - a. To be displayed in airplane at all times:
 - (1) Airworthiness and Registration Certificates.
 - (2) Transmitter License(s).
 - b. To be carried in the airplane at all times:
 - (1) FAA Approved Airplane Flight Manual.
 - (2) Honeywell Primus 1000 Pilot's Manual.
 - (3) Applicable FMS Pilot's Manual.
2. Flashlight - ABOARD.
3. Portable Fire Extinguisher - SERVICED and SECURE.
4. Microphones, Headsets, and Oxygen Masks - ABOARD.
5. Oxygen Quantity - CHECK.
6. Control Lock - UNLOCKED.
7. Gear Handle - DOWN.
8. Rudder, Aileron and Elevator Trim - POSITION trim tab indicator within takeoff trim range.
9. Flaps Handle - AGREES with Flaps position.
10. Left and Right Circuit Breakers - IN.
11. Generators - GEN (OFF, if external power is to be used for start).
12. All other switches - OFF or NORM.
13. Throttles - OFF.
14. Battery Switch - BATT (24 volts minimum).
15. Fuel Quantity - CHECK.
16. Pitot/Static Heat - ON - 30 seconds - OFF.
17. Landing Lights - ON - (check illumination on ground - OFF, if seen from cockpit).
18. Recognition Lights - ON (check illumination).
19. Other External Lights and Passenger Advisory Lights - ON. (check illumination - OFF, if seen from cockpit).

NOTE

- Expedite all checks with electrical power on and ensure that the air conditioner switch is OFF, if external power is not used.
- Landing and nav lights may be omitted if night flight is not anticipated.

EXTERIOR INSPECTION

During inspection, make a general check for security, condition and cleanliness of the airplane and components. Check particularly for damage; fuel, oil and hydraulic fluid leakage; security of access panels; and removal of keys from locks.

1. Hot Items/Lights - CHECK.

(Continued Next Page)

EXTERIOR INSPECTION (Continued)

- a. Left and Right Static Ports - CLEAR and WARM.
- b. Left and Right Pitot Tubes - CLEAR and HOT.
- c. Standby Airspeed Pitot Tube - CLEAR and HOT.
- d. Ram Air Temperature Probe - CLEAR.
- e. Landing Lights - BOTH ON (if not observed from cockpit).
- f. Recognition Lights - BOTH ON (if not observed from cockpit).
- g. Angle-of-attack Vane - FREE and HOT.
- h. Flashing Beacon - ON and FLASHING (if not observed from cockpit).
- i. Right Wing Inspection, Navigation, and Strobe Lights - ON (if not observed from cockpit).
- j. Tail Navigation Light - ON.
- k. Left Wing Inspection, Navigation, and Strobe Lights - ON (if not observed from cockpit).
- l. Lights and Battery Switches - OFF.
2. Left Nose - CHECK.
 - a. Brake Fluid Reservoir Sight Gages - FLUID VISIBLE.
 - b. Power Brake Accumulator Charge - LIGHT GREEN ARC (precharged pressure) or DARK GREEN ARC (operating pressure if battery was turned on and circuit breaker was in during cockpit inspection).
 - c. Baggage Door - SECURE and LOCKED.
 - d. Nose Gear, Doors, Wheel and Tire - CONDITION and SECURE.
3. Right Nose and Fuselage Right Side - CHECK.
 - a. Windshield Alcohol Reservoir Sight Gage - FLUID VISIBLE.
 - b. Brake and Gear Pneumatic Pressure Gage - GREEN ARC.
 - c. Baggage Door - SECURE and LOCKED.
 - d. Oxygen Blowout Disc - GREEN.
 - e. Overboard Vent Lines - CLEAR.
 - f. Top and Bottom Antennas - CONDITION and SECURE.
4. Right Wing - CHECK.
 - a. Dorsal Fin Air Inlet - CLEAR.
 - b. Pylon Tailcone Air Inlet - CLEAR.
 - c. Forward T₁ Sensor - CONDITION.
 - d. Engine Fan Duct and Fan - CONDITION.

NOTE

If fan is windmilling, install exhaust cover to stop. If any damage is observed, refer to Chapter 72 of the Engine Maintenance Manual.

- e. Generator Cooling Air Inlet - CLEAR.
- f. Wing Inspection Light - CONDITION.
- g. Anti-Ice Bleed Air Cooling Air Inlet - CLEAR.
- h. Heated Leading Edge - CONDITION and VENTS CLEAR.
- i. Fuel Quick Drains - DRAIN and CHECK for contamination (6).
- j. Fuel Filter Drain - DRAIN.
- k. Main Gear Door, Wheel, Tire and Brake - CONDITION and SECURE.
- l. Deice Boot - CONDITION and SECURE.
- m. Fuel Filler Cap - SECURE.
- n. Fuel Tank Vent - CLEAR.
- o. Navigation, Strobe, Landing and Recognition Lights - CONDITION.

(Continued Next Page)

EXTERIOR INSPECTION (Continued)

- p. Static Wicks - CHECK (5).

NOTE

Maximum of 3 static wicks missing from entire airframe, and no two may be missing consecutively.

- q. Aileron, Flaps and Speed Brakes - CONDITION and SECURE. (assure flaps position matches indicator).
5. Right Nacelle - CHECK.
- a. Oil Level - CHECK; Filler Cap and Access Door - SECURE.
 - b. Generator Cooling Air Exhaust - CLEAR.
 - c. Engine Fluid Drain Mast - CLEAR.
 - d. Engine Exhaust and Bypass Ducts - CONDITION and CLEAR.
 - e. Aft T₁ Sensor - CONDITION.
 - f. Thrust Reverser Buckets - CONDITION AND STOWED.
6. Right Empennage - CHECK.
- a. Deice Boot Overboard Vents - CLEAR.
 - b. Air Conditioning Overboard Exhaust - CLEAR.
 - c. Hydraulic Service Door - SECURE, drain mast clear.
 - d. Anti-Ice Bleed Air Cooling Air Exhaust - CLEAR.
 - e. Right Horizontal Stabilizer Deice Boot - CONDITION and SECURE.
 - f. Right Elevator and Trim Tab - MOVEMENT and CONDITION. Assure trim tab position matches elevator trim tab position indicator.
 - g. Tail Mounted Beacon Light - CONDITION.
 - h. Tail Skid - CONDITION and SECURE.
 - i. Rudder and Trim Tab - SECURE and CORRECT SERVO TAB ACTION.
 - j. Static Wicks (Rudder, Vertical Stabilizer and Both Elevators) - CHECK (8).

NOTE

Maximum of 3 static wicks missing from entire airframe, and no two missing consecutively. All 4 elevator static wicks must be installed.

7. Left Empennage - CHECK.
- a. External Power Service Door - SECURE.
 - b. Battery Cooling Intake and Vent Lines - CLEAR.
 - c. Windshield Heat Exchanger Overboard Exhaust - CLEAR.
 - d. Anti-Ice Bleed Air Cooling Air Exhaust - CLEAR.
 - e. Left Elevator and Trim Tab - MOVEMENT and CONDITION. Assure trim tab position matches elevator trim tab position indicator.
 - f. Left Horizontal Stabilizer Deice Boot - CONDITION and SECURE.
8. Aft Compartment - CHECK.
- a. Hydraulic Fluid Quantity - CHECK.
 - b. Fire Bottle Pressure Gages - CHECK temperature pressure relationship.
 - c. Junction Box Circuit Breakers - IN.
 - d. ACM Oil Level - CHECK.
 - e. Tailcone Access Door - SECURE.
 - f. Aft Compartment Baggage - SECURE.
 - g. Aft Compartment Light - OFF.
 - h. Aft Compartment Access Door - SECURE and LOCKED.
9. Left Nacelle - CHECK.
- a. Thrust Reverser buckets - CONDITION AND STOWED.
 - b. Aft T₁ Sensor - CONDITION.
 - c. Engine Exhaust and Bypass Ducts - CONDITION and CLEAR.

EXTERIOR INSPECTION (Continued)

- d. Engine Fluid Drain Mast - CLEAR.
- e. Generator Cooling Air Exhaust - CLEAR.
- f. Oil Level - CHECK; Filler Cap and Access Door - SECURE.
- 10. Left Wing - CHECK.
 - a. Flap, Speed Brakes, Aileron and Trim Tab - CONDITION and SECURE.
 - b. Static Wicks - CHECK. (5)

NOTE

Maximum of 3 static wicks missing from entire airframe, and no two may be missing consecutively.

- c. Navigation, Strobe, Landing and Recognition Lights - CONDITION.
- d. Fuel Tank Vent - CLEAR.
- e. Fuel Filler Cap - SECURE.
- f. Deice Boot - CONDITION and SECURE.
- g. Main Gear Door, Wheel, Tire and Brake - CONDITION and SECURE.
- h. Fuel Filter Drain - DRAIN.
- i. Fuel Quick Drains - DRAIN and CHECK for contamination (6).
- j. Heated Leading Edge - CONDITION and VENTS CLEAR.
- k. Anti-Ice Bleed Air Cooling Air Inlet - CLEAR.
- l. Wing Inspection Light - CONDITION.
- m. Generator Cooling Air Inlet - CLEAR.
- n. Engine Fan Duct and Fan - CONDITION.

NOTE

If fan is windmilling, install exhaust cover to stop. If any damage is observed, refer to Chapter 72 of the Engine Maintenance Manual.

- o. Forward T₁ Sensor - CONDITION.
- p. Dorsal Fin Air Inlet - CLEAR.
- q. Secondary Cabin Door Seal - CHECK for RIPS, TEARS and FOLDING.

CABIN INSPECTION

- 1. Emergency Exit - SECURE; Handle Lock Pin - REMOVE.
- 2. Passenger Seats - UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD as required to clear exit doors.
- 3. Door Entry Lights - OFF.
- 4. Exit Placard - SECURE.
- 5. Portable Fire Extinguishers - SERVICED and SECURE.

COCKPIT INSPECTION

- 1. Oxygen Masks - Checked and Properly stowed (Check mask at 100% and in EMER, Check mic).
- 2. Oxygen Control Valve - CHECK IN NORMAL.
- 3. Control Lock - OFF. (Ensure that the handle is fully in, controls and throttle are free).
- 4. Circuit Breakers - CHECK
- 5. Generators - GEN (OFF if external power is to be used for start).
- 6. Ignition - NORM.
- 7. Boost Pumps - NORM.
- 8. Fuel Crossfeed - OFF.
- 9. LH/RH Gyro Slave - AUTO.

(Continued Next Page)

COCKPIT INSPECTION (Continued)

10. Standby Gyro Switch - TEST momentary; Check Green Light ON.
11. Standby Gyro - ON; Check Amber Light ON.
12. Antiskid - ON.
13. Ground Idle Switch - NORM.
14. Engine Synchronizer - OFF.
15. Throttles - CHECK OFF.
16. Pressurization Source Select - AS REQUIRED.
17. Windshield Bleed Air Valves - OFF.
18. Air Conditioner - OFF.
19. Radar - OFF or STBY.
20. All Other Switches - OFF or NORM.
21. Battery Switch - EMER (check power to emergency bus items).

With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Flight Display
DG 1	Pilot's and Copilot's Audio Panels	
Standby HSI	Voltmeter	

22. Battery Switch - BATT.
23. Battery Voltage - CHECK (24 volts minimum).
24. External Power - CONNECTED (if applicable).
25. Landing Gear Control - DOWN.
26. Landing Gear Lights - CHECK green lights illuminated and unlock light out.
27. Parking Brake - SET.
28. Avionics Power Switch(es) - ON (and AC, if applicable).
29. Rotary Test Switch - WARNING SYSTEMS CHECKED.

NOTE

The W/S TEMP annunciator may not test after cold soak at extremely cold temperatures. If this occurs, repeat the test after the cabin has warmed up. The test must be completed prior to flight.

30. Avionics Power Switch(es) - OFF.
31. Engine Instrument Warning Indicators - NO FLAGS.
32. Battery - OFF (If there is a delay before engine start, or ON with ground power unit).

QUICK TURNAROUND

1. Control Lock - OFF.
2. Generators - GEN (off if external power).
3. Boost Pumps - NORM.
4. Standby Gyro - ON/CHECK AMBER.
5. Throttles - CHECK OFF.
6. Pilot and Copilot Foot Warmers - OPEN
7. All Other Switches - OFF OR NORM.
8. Battery Switch - BATT.
9. Battery Voltage - CHECK (24 volts minimum).
10. External Power - CONNECTED (if applicable).
11. Landing Gear Control - DOWN.
12. Landing Gear Lights - CHECK.
13. Parking Brake - SET.
14. Engine Instrument Warning Indicators - NO FLAGS.

BEFORE STARTING ENGINES

1. Preflight Inspection - COMPLETE.
2. Wheel Chocks - REMOVED.
3. Cabin Door - CLOSE and LOCK. Check green indicators for proper door pin position, handle vertical and in detent.
4. Passenger Briefing - COMPLETE. (Include, seat/seat belt adjustment, emergency exits, smoking, and oxygen).
5. Seats, Seat Belts, Shoulder Harnesses and Rudder Pedals - ADJUST and SECURE.
6. Fuel Quantity - CHECKED.
7. Flashing Beacon Light - ON.
8. Air Conditioner - OFF.
9. Ground Idle Switch - NORM.

STARTING ENGINES

NOTE

- Either engine may be started first.
- If the aircraft has been cold soaked at temperatures below -12°C (10°F) and the engines have not been preheated, the use of external power or warming the battery to -12°C (10°F) or warmer is recommended. This temperature may be checked with the battery temperature gage. Proper battery warmup may require extended application of heat to the battery.

1. Flood and Center Panel Lights - FULL BRIGHT (for night operation).
2. Start Button - PRESS momentarily; Button Light - ILLUMINATES.
3. Throttle - IDLE at 8-10% N₂ (minimum).
4. ITT - CHECK for rise. Abort start if ITT rapidly approaches 550°C or shows no rise within 10 seconds.

NOTE

The temperature during ground start should not exceed 550°C. Temperatures exceeding this value should be investigated in accordance with the Engine Maintenance Manual.

5. Fan Speed - CHECK for indication of fan RPM with turbine RPM at 20% to 25%. Abort start if no fan RPM is shown by 25% turbine RPM.
6. Engine Instruments - CHECK NORMAL.
7. Fuel, Oil, Generator and Hydraulic Annunciators - EXTINGUISHED.
8. Ground Idle Switch - HIGH. Check high idle 51.5% turbine RPM Minimum.
9. Pressurization Source Selector - GND or NORM.

CAUTION

TURBINE SPEED GREATER THAN 53% ON THE OPERATING ENGINE WILL PRODUCE A GENERATOR OUTPUT WHICH MAY DAMAGE THE GENERATOR DRIVE DURING THE SECOND ENGINE START.

(Continued Next Page)

COCKPIT INSPECTION (Continued)

10. Standby Gyro Switch - TEST momentary; Check Green Light ON.
11. Standby Gyro - ON; Check Amber Light ON.
12. Antiskid - ON.
13. Ground Idle Switch - NORM.
14. Engine Synchronizer - OFF.
15. Throttles - CHECK OFF.
16. Pressurization Source Select - AS REQUIRED.
17. Windshield Bleed Air Valves - OFF.
18. Air Conditioner - OFF.
19. Radar - OFF or STBY.
20. All Other Switches - OFF or NORM.
21. Battery Switch - EMER (check power to emergency bus items).

With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Airspeed Indicator/Altimeter
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI	Voltmeter	

22. Battery Switch - BATT.
23. Battery Voltage - CHECK (24 volts minimum).
24. External Power - CONNECTED (if applicable).
25. Landing Gear Control - DOWN.
26. Landing Gear Lights - CHECK green lights illuminated and unlock light out.
27. Parking Brake - SET.
28. Avionics Power Switch(es) - ON (and AC, if applicable).
29. Rotary Test Switch - WARNING SYSTEMS CHECKED.

NOTE

The W/S TEMP annunciator may not test after cold soak at extremely cold temperatures. If this occurs, repeat the test after the cabin has warmed up. The test must be completed prior to flight.

30. Avionics Power Switch(es) - OFF.
31. Engine Instrument Warning Indicators - NO FLAGS.
32. Battery - OFF (If there is a delay before engine start, or ON with ground power unit).

QUICK TURNAROUND

1. Control Lock - OFF.
2. Generators - GEN (off if external power).
3. Boost Pumps - NORM.
4. Standby Gyro - ON/CHECK AMBER.
5. Throttles - CHECK OFF.
6. Pilot and Copilot Foot Warmers - OPEN
7. All Other Switches - OFF OR NORM.
8. Battery Switch - BATT.
9. Battery Voltage - CHECK (24 volts minimum).
10. External Power - CONNECTED (if applicable).
11. Landing Gear Control - DOWN.
12. Landing Gear Lights - CHECK.
13. Parking Brake - SET.
14. Engine Instrument Warning Indicators - NO FLAGS.
15. Standby Gyro Caging Knob - UNCAGED and NO FLAG.

BEFORE STARTING ENGINES

1. Preflight Inspection - COMPLETE.
2. Wheel Chocks - REMOVED.
3. Cabin Door - CLOSE and LOCK. Check green indicators for proper door pin position, handle vertical and in detent.
4. Passenger Briefing - COMPLETE. (Include, seat/seat belt adjustment, emergency exits, smoking, and oxygen).
5. Seats, Seat Belts, Shoulder Harnesses and Rudder Pedals - ADJUST and SECURE.
6. Fuel Quantity - CHECKED.
7. Flashing Beacon Light - ON.
8. Air Conditioner - OFF.
9. Ground Idle Switch - NORM.

STARTING ENGINES

NOTE

- Either engine may be started first.
- If the aircraft has been cold soaked at temperatures below -12°C (10°F) and the engines have not been preheated, the use of external power or warming the battery to -12°C (10°F) or warmer is recommended. This temperature may be checked with the battery temperature gage. Proper battery warmup may require extended application of heat to the battery.

1. Flood and Center Panel Lights - FULL BRIGHT (for night operation).
2. Start Button - PRESS momentarily; Button Light - ILLUMINATES.
3. Throttle - IDLE at 8-10% N₂ (minimum).
4. ITT - CHECK for rise. Abort start if ITT rapidly approaches 550°C or shows no rise within 10 seconds.

NOTE

The temperature during ground start should not exceed 550°C. Temperatures exceeding this value should be investigated in accordance with the Engine Maintenance Manual.

5. Fan Speed - CHECK for indication of fan RPM with turbine RPM at 20% to 25%. Abort start if no fan RPM is shown by 25% turbine RPM.
6. Engine Instruments - CHECK NORMAL.
7. Fuel, Oil, Generator and Hydraulic Annunciators - EXTINGUISHED.
8. Ground Idle Switch - HIGH. Check high idle 51.5% turbine RPM Minimum.
9. Pressurization Source Selector - GND or NORM.

CAUTION

TURBINE SPEED GREATER THAN 53% ON THE OPERATING ENGINE WILL PRODUCE A GENERATOR OUTPUT WHICH MAY DAMAGE THE GENERATOR DRIVE DURING THE SECOND ENGINE START.

(Continued Next Page)

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Flight Display - CHECK/NO FLAG.

(Continued Next Page)

BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch. Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (at pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Inverter Phase Angle - CHECK.
 - a. Copilot's HDG REV Switch - PUSH, MAG 1 should annunciate on both PFDs.
 - b. Pilot and Copilot Heading Displays - COMPARE.
 - c. If Headings differ by 6° or more, Inverter No. 2 Circuit Breaker - PULL and RESET.
 - d. Copilot's HDG REV Switch - PUSH to restore MAG 2 as heading source to Copilot's PFD.

NOTE

- The HDG REV button may require more than one push to select heading reversion mode. Reversion is verified by observing an amber MAG1 or MAG2, as appropriate, in each PFD.
 - A significant heading difference indicates an excessive phase angle between inverters. This can adversely affect FMS, TCAS, and RADAR operation. Correct phase relation can be restored by pulling and resetting circuit breakers on either inverter.
20. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view and failed inverter is annunciated; then, Inverter Switch - NORM.
 21. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and HOLD for 2 seconds.
 22. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Flight Display - CHECK/NO FLAG.

(Continued Next Page)

BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; (Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (At pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view.
20. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and Hold for 2 seconds.
21. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Gyro Caging Knob - UNCAGED/NO FLAG.

(Continued Next Page)

BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch. Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (at pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Inverter Phase Angle - CHECK.
 - a. Copilot's HDG REV Switch - PUSH, MAG 1 should annunciate on both PFDs.
 - b. Pilot and Copilot Heading Displays - COMPARE.
 - c. If Headings differ by 6° or more, Inverter No. 2 Circuit Breaker - PULL and RESET.
 - d. Copilot's HDG REV Switch - PUSH to restore MAG 2 as heading source to Copilot's PFD.

NOTE

- The HDG REV button may require more than one push to select heading reversion mode. Reversion is verified by observing an amber MAG1 or MAG2, as appropriate, in each PFD.
 - A significant heading difference indicates an excessive phase angle between inverters. This can adversely affect FMS, TCAS, and RADAR operation. Correct phase relation can be restored by pulling and resetting circuit breakers on either inverter.
20. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view and failed inverter is annunciated; then, Inverter Switch - NORM.
 21. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and HOLD for 2 seconds.
 22. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Gyro Caging Knob - UNCAGED/NO FLAG.

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BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; (Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (At pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view.
20. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and Hold for 2 seconds.
21. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Flight Display - CHECK/NO FLAG.

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BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; (Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (At pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view.
20. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and Hold for 2 seconds.
21. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Gyro Caging Knob - UNCAGED/NO FLAG.

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BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; (Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (At pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view.
20. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and Hold for 2 seconds.
21. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
13. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Flight Display - CHECK/NO FLAG.

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BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch. Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (at pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Inverter Phase Angle - CHECK.
 - a. Copilot's HDG REV Switch - PUSH, MAG 1 should annunciate on both PFDs.
 - b. Pilot and Copilot Heading Displays - COMPARE.
 - c. If Headings differ by 6° or more, Inverter No. 2 Circuit Breaker - PULL and RESET.
 - d. Copilot's HDG REV Switch - PUSH to restore MAG 2 as heading source to Copilot's PFD.

NOTE

A significant heading difference indicates an excessive phase angle between inverters. This can adversely affect FMS, TCAS, and RADAR operation. Correct phase relation can be restored by pulling and resetting circuit breakers on either inverter.

20. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view and failed inverter is annunciated; then, Inverter Switch - NORM.
21. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and HOLD for 2 seconds.
22. Lights - AS REQUIRED.

STARTING ENGINES (Continued)

10. Other engine - START; repeat step 2 through 7.
11. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM Minimum.
12. External Power - CHECK CLEAR (if applicable).
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NOTE

When operating in visible moisture and ambient air temperature is +10°C or below, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es) - ON (and AC, if applicable)

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The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE and RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the self-test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Standby Gyro Caging Knob - UNCAGED/NO FLAG.

(Continued Next Page)

BEFORE TAXIING (Continued)

10. Electric Elevator Trim - CHECK and SET; Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch. Set the trim as required for center-of-gravity.
11. Aileron and Rudder Trim - SET.
12. Autopilot - (at pilot's discretion) CHECK; engage, push pilot's A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
13. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
14. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
15. ATIS, Clearance and Flight Management System - CHECK.
16. Flaps - CHECK and SET.

NOTE

Verify flaps trim interconnect operation between 15 and 25 degrees.

17. Flight Controls - FREE AND CORRECT.
18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Inverter Phase Angle - CHECK.
 - a. Copilot's HDG REV Switch - PUSH, MAG 1 should annunciate on both PFDs.
 - b. Pilot and Copilot Heading Displays - COMPARE.
 - c. If Headings differ by 6° or more, Inverter No. 2 Circuit Breaker - PULL and RESET.
 - d. Copilot's HDG REV Switch - PUSH to restore MAG 2 as heading source to Copilot's PFD.

NOTE

A significant heading difference indicates an excessive phase angle between inverters. This can adversely affect FMS, TCAS, and RADAR operation. Correct phase relation can be restored by pulling and resetting circuit breakers on either inverter.

20. AC Inverter Switch - CHECK INV 1 and INV 2. VERIFY gyro flags remain out of view and failed inverter is annunciated; then, Inverter Switch - NORM.
21. Cockpit Voice Recorder Test Button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and HOLD for 2 seconds.
22. Lights - AS REQUIRED.

TAXIING

1. Brakes - CHECK.

CAUTION

IF, DURING TAXI, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE FLIGHT.

2. Engine Instruments - CHECK NORMAL.
3. Flight Instruments - CHECK.
4. Speed Brakes - CYCLE.
5. Thrust Reversers - CHECKED and STOWED; CHECK SEQUENCING AND TIMING OF LIGHTS.
6. Pressurization Source Selector - NORM.
7. Deice Systems - CHECK (when icing conditions are anticipated).

CAUTION

DO NOT OPERATE DEICE BOOTS WHEN AMBIENT AIR TEMPERATURE IS BELOW -40°C (-40°F).

8. Anti-Ice Systems - CHECK.

CAUTION

LIMIT GROUND OPERATION OF PITOT/STATIC HEAT TO TWO MINUTES TO PRECLUDE DAMAGE TO THE ANGLE-OF-ATTACK SYSTEM.

9. V_1 , V_R , V_2 , Fan Speed Settings - Look up, Input and CONFIRM proper V speeds on PFD's.
10. Crew Briefing - COMPLETE.

BEFORE TAKEOFF

1. Passenger Seats - POSITION in accordance with associated placard.
2. Anti-collision Lights - ON.

NOTE

Do not operate the anti-collision lights in conditions of fog, clouds or haze as the reflection of the light beam can cause disorientation or vertigo.

3. Landing or Recognition Lights - AS DESIRED.
4. Flaps - SET FOR TAKEOFF
5. Trim - SET FOR TAKEOFF.
6. Transponder - ON.
7. Radar - ON.
8. Anti-Ice/Deice Systems - ON if required.
9. Ignition - ON.
10. Pitot/Static Heat - ON.
11. Annunciator Panel - CLEAR except GROUND IDLE light.

TAKEOFF

1. Throttles - SET for takeoff.
2. Engine Instruments - CHECK.
3. Brakes - RELEASE.

AFTER TAKEOFF - CLIMB

1. Landing Gear - UP.
2. Flaps - UP.
3. Ignition - NORM.
4. Climb Power - SET.
5. Engine Synchronizer - AS REQUIRED.
6. Yaw Damper - AS REQUIRED.
7. Passenger Advisory Lights - AS REQUIRED.
8. Anti-Ice/Deice Systems - AS REQUIRED.
9. Pressurization - CHECK.
10. Landing/Recognition Lights - OFF.
11. Altimeters - SET to 29.92 Hg (1013 mb/HPa) at transition altitude and CROSSCHECK.
12. Freon AC - OFF above 18,000 feet.
13. Cockpit Temperature Select - VERIFY AUTO (above 31,000 feet).

CRUISE

1. Cruise Power - SET.
2. Anti-Ice/Deice Systems - AS REQUIRED.

CAUTION

DO NOT OPERATE DEICE BOOTS WHEN INDICATED RAT IS BELOW -40°C (-40°F).

NOTE

- Check deice system for proper operation prior to entering areas in which icing might be encountered.
- Manual activation of the surface deice system may cause a mild pitch transient.
- The pilot's and copilot's footwarmers should be opened for a short period during cruise to purge the side windows of moist air. The foot warmers should be closed during descent.

DESCENT

1. Defog Fan - HI (minimum of 15 minutes prior to descent).
2. Pilot and Copilot Foot Warmers - CLOSE
3. Air Flow Distribution - COCKPIT.
4. Windshield Bleed Air Valves - MAX (AS REQUIRED).
5. Windshield Bleed Air Switch - LOW (AS REQUIRED).
6. ATIS/Clearance - AS REQUIRED.
7. Cabin Pressure Control - SET.
8. Anti-Ice/Deice Systems - AS REQUIRED.
9. Throttles - AS REQUIRED; maintain sufficient power for anti-icing (engine anti-ice lights remain OFF).
10. Altimeters - SET at transition altitude and CROSSCHECK.
11. Recognition Lights - ON.
12. Speed Brakes - AS REQUIRED.

APPROACH

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. Landing Speeds - (V_{APP} and V_{REF}) - Look up, Input and CONFIRM.
5. Landing Data (N_1 , Landing Distance, Weight, and Factors) - CONFIRM.
6. Crew Briefing - COMPLETE.
7. Passenger Advisory Lights - PASS SAFETY.
8. Passenger Seats - POSITION in accordance with associated placard.
9. Flaps - APPROACH.
10. Engine Synchronizer - OFF.
11. Ground Idle Switch - NORM; or HIGH (if ground icing anticipated, or for touch and go landing).
12. Fuel Crossfeed - OFF.
13. Antiskid - CHECK ON.
14. Recognition Lights - ON.

WARNING

WITH ANY RESIDUAL ICE PRESENT DO NOT ATTEMPT TO FLY UNCORRECTED V_{REF}/V_{APP} SPEEDS. STALL SPEEDS INCREASE AND ENGINE ANTI-ICE MUST BE SELECTED ON TO MAINTAIN ADEQUATE STALL WARNING MARGINS.

CAUTION

IN ICING CONDITIONS, A SMALL AMOUNT OF RESIDUAL ICE WILL FORM ON UNPROTECTED AREAS. THIS IS NORMAL, BUT CAN CAUSE AN INCREASE IN STALL SPEEDS. WHEN ANY AMOUNT OF RESIDUAL ICE IS VISIBLE, THE STALL SPEEDS IN FIGURE 4-7 INCREASE BY 5 KNOTS; THE V_{REF}/V_{APP} SPEEDS, LANDING DISTANCES AND THE MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS MUST BE ADJUSTED IN ACCORDANCE WITH FIGURE 4-32.

NOTE

- When reconfiguring for approach and landing (i.e., flaps extended and gear down), and any ice accretion is visible on the wing leading edge, regardless of thickness, activate the surface deice system. Continue to monitor the wing leading edge for any reaccumulation.
- For increased rates of descent in icing conditions, the use of landing flaps is recommended. This will allow a higher power setting greater than 75% N_2 , if necessary, to maintain engine anti-icing capabilities.

BEFORE LANDING

1. Landing Gear - DOWN and LOCKED.
2. Landing Lights - AS DESIRED.
3. Ignition - ON.
4. Flaps - LAND.
5. Airspeed - V_{REF} .
6. Autopilot and Yaw Damper - OFF.
7. Annunciator Panel - CLEAR.
8. Pressurization - CHECK ZERO DIFFERENTIAL.
9. Speed Brakes - RETRACTED PRIOR TO 50 FEET.

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

2. Brakes - APPLY (after touchdown).

CAUTION

IF, DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the antiskid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

3. Control Wheel - APPLY FORWARD PRESSURE.

CAUTION

THE NOSEWHEEL MUST BE IN FIRM CONTACT WITH THE GROUND PRIOR TO EXTENDING SPEED BRAKES AND/OR DEPLOYING THRUST REVERSERS.

4. Speed Brakes - EXTEND (after nosewheel firm ground contact).
5. Thrust Reversers - DEPLOY (after nosewheel firm ground contact).

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKEOFF ONCE REVERSERS HAVE STARTED TO DEPLOY.

NOTE

- To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nose wheel is on the ground.
 - To avoid possible jamming of the throttle lockout cams, do not exceed approximately 15 pounds force on the thrust reverser levers until thrust reversers are fully deployed.
6. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
 7. Reverse Power - AS REQUIRED (do not exceed 76.6% N_1 when OAT is below -18°C or 80.1% N_1 at or above -18°C OAT).
 8. Thrust Reversers - REVERSER LEVERS TO IDLE REVERSE AT 60 KIAS.

ALL ENGINES GO-AROUND

1. Thrust - SET FOR TAKEOFF.
2. Airplane Pitch Attitude - POSITIVE Rotation To +10 Degrees (use flight director go-around mode).
3. Flaps - TAKEOFF and APPROACH.
4. Climb Speed - V_{APP} .
5. Landing Gear - UP (when positive rate of climb is established).
6. Flaps - UP.
7. Thrust - SET FOR CLIMB.

AFTER LANDING

1. Thrust Reversers - STOW.

CAUTION

DO NOT ADVANCE THROTTLES UNTIL THE THRUST REVERSER UNLOCK LIGHTS ARE OUT.

2. Flaps - UP.
3. Ignition - NORMAL.
4. Pitot/Static Heat - OFF.
5. Speed Brakes - RETRACT.
6. Anti-Collision Lights and Recognition Lights - OFF, if necessary.
7. Anti-Ice/Deice Systems - OFF.
8. Transponder - OFF or STANDBY.
9. Radar - OFF or STANDBY.

SHUTDOWN

1. Avionics Power Switch(es) - OFF.
2. Defog Fan - OFF.
3. Air Conditioner - OFF.
4. Flaps - TAKEOFF and APPROACH.
5. Throttles - OFF after allowing ITT to stabilize at minimum value for one minute.
6. Passenger Advisory Lights - OFF.
7. Flashing Beacon Light - OFF.
8. Standby Gyro Switch - OFF.
9. Exterior Lights - OFF.
10. Control Lock - ENGAGE.
11. Parking Brake - SET or Wheels - CHOCK.

NOTE

- If brakes are very hot, do not set parking brake.
 - Do not set parking brake if the anticipated cold soak temperature is -15°C (5°F) or below.
12. Battery Switch - OFF.
 13. Engine Covers - INSTALL (after engines have cooled).

TURBULENT AIR PENETRATION

Flight through severe turbulence should be avoided if possible. The following is recommended for flight in severe turbulence.

1. Ignition - ON.
2. Airspeed approximately 180 KIAS. Do not chase airspeed.
3. Maintain a constant attitude without chasing the altitude. Avoid sudden large control movements.
4. Operation of the autopilot is recommended using basic pitch hold and lateral mode only.

ANTI-ICE ADDITIVES

PROCEDURE FOR ADDING ETHYLENE GLYCOL MONOMETHYL ETHER (EGME) FUEL ADDITIVE

Use the following procedure to blend anti-icing additive as the airplane is being refueled through the wing filler caps:

1. Attach MIL-I-27686 additive to refuel nozzle, making sure blender tube discharges in the refueling stream.
2. Start refueling while simultaneously fully depressing and slipping ring over trigger of blender.

WARNING

ANTI-ICING ADDITIVES CONTAINING ETHYLENE GLYCOL MONOMETHYL ETHER (EGME) ARE HARMFUL IF INHALED, SWALLOWED OR ABSORBED THROUGH THE SKIN, AND WILL CAUSE EYE IRRITATION. ALSO, IT IS COMBUSTIBLE. BEFORE USING THIS MATERIAL, REFER TO ALL SAFETY INFORMATION ON THE CONTAINER.

CAUTION

ASSURE THAT THE ADDITIVE IS DIRECTED INTO THE FLOWING FUEL STREAM AND THAT THE ADDITIVE FLOW IS STARTED AFTER THE FUEL FLOW STARTS AND IS STOPPED BEFORE FUEL FLOW STOPS. DO NOT ALLOW CONCENTRATED ADDITIVE TO CONTACT COATED INTERIOR OF FUEL TANK OR AIRPLANE PAINTED SURFACE. USE NOT LESS THAN 20 FLUID OUNCES OF ADDITIVE PER 156 GALLONS OF FUEL OR MORE THAN 20 FLUID OUNCES OF ADDITIVE PER 104 GALLONS OF FUEL.

(Continued Next Page)

ALL ENGINES GO-AROUND

1. Thrust - SET FOR TAKEOFF.
2. Airplane Pitch Attitude - POSITIVE Rotation To +10 Degrees (use flight director go-around mode).
3. Flaps - TAKEOFF and APPROACH.
4. Climb Speed - V_{APP} .
5. Landing Gear - UP (when positive rate of climb is established).
6. Flaps - UP.
7. Thrust - SET FOR CLIMB.

AFTER LANDING

1. Thrust Reversers - STOW.

CAUTION

DO NOT ADVANCE THROTTLES UNTIL THE THRUST REVERSER UNLOCK LIGHTS ARE OUT.

2. Flaps - UP.
3. Ignition - NORMAL.
4. Pitot/Static Heat - OFF.
5. Speed Brakes - RETRACT.
6. Anti-Collision Lights and Recognition Lights - OFF, if necessary.
7. Anti-Ice/Deice Systems - OFF.
8. Transponder - OFF or STANDBY.
9. Radar - OFF or STANDBY.

SHUTDOWN

1. Avionics Power Switch(es) - OFF.
2. Defog Fan - OFF.
3. Air Conditioner - OFF.
4. Flaps - TAKEOFF and APPROACH.
5. Throttles - OFF after allowing ITT to stabilize at minimum value for one minute.
6. Passenger Advisory Lights - OFF.
7. Flashing Beacon Light - OFF.
8. Standby Gyro - CAGE
9. Standby Gyro Switch - OFF.
10. Exterior Lights - OFF.
11. Control Lock - ENGAGE.
12. Parking Brake - SET or Wheels - CHOCK.

NOTE

- If brakes are very hot, do not set parking brake.
- Do not set parking brake if the anticipated cold soak temperature is -15°C (5°F) or below.

13. Battery Switch - OFF.
14. Engine Covers - INSTALL (after engines have cooled).

TURBULENT AIR PENETRATION

Flight through severe turbulence should be avoided if possible. The following is recommended for flight in severe turbulence.

1. Ignition - ON.
2. Airspeed approximately 180 KIAS. Do not chase airspeed.
3. Maintain a constant attitude without chasing the altitude. Avoid sudden large control movements.
4. Operation of the autopilot is recommended using basic pitch hold and lateral mode only.

ANTI-ICE ADDITIVES

PROCEDURE FOR ADDING ETHYLENE GLYCOL MONOMETHYL ETHER (EGME) FUEL ADDITIVE

Use the following procedure to blend anti-icing additive as the airplane is being refueled through the wing filler caps:

1. Attach MIL-I-27686 additive to refuel nozzle, making sure blender tube discharges in the refueling stream.
2. Start refueling while simultaneously fully depressing and slipping ring over trigger of blender.

WARNING

ANTI-ICING ADDITIVES CONTAINING ETHYLENE GLYCOL MONOMETHYL ETHER (EGME) ARE HARMFUL IF INHALED, SWALLOWED OR ABSORBED THROUGH THE SKIN, AND WILL CAUSE EYE IRRITATION. ALSO, IT IS COMBUSTIBLE. BEFORE USING THIS MATERIAL, REFER TO ALL SAFETY INFORMATION ON THE CONTAINER.

CAUTION

ASSURE THAT THE ADDITIVE IS DIRECTED INTO THE FLOWING FUEL STREAM AND THAT THE ADDITIVE FLOW IS STARTED AFTER THE FUEL FLOW STARTS AND IS STOPPED BEFORE FUEL FLOW STOPS. DO NOT ALLOW CONCENTRATED ADDITIVE TO CONTACT COATED INTERIOR OF FUEL TANK OR AIRPLANE PAINTED SURFACE. USE NOT LESS THAN 20 FLUID OUNCES OF ADDITIVE PER 156 GALLONS OF FUEL OR MORE THAN 20 FLUID OUNCES OF ADDITIVE PER 104 GALLONS OF FUEL.

(Continued Next Page)

ANTI-ICE ADDITIVES (Continued)**PROCEDURE FOR ADDING DIETHYLENE GLYCOL MONOMETHYL ETHER (DIEGME) FUEL ADDITIVE****NOTE**

Service experience has shown that DIEGME has provided acceptable protection from bacterial growth in fuel systems.

Use the following procedure to blend anti-icing additive as the airplane is being refueled through the wing filler caps:

1. Attach MIL-I-85470 additive to refuel nozzle, making sure blender tube discharges in the refueling stream.
2. Start refueling while simultaneously fully depressing and slipping ring over trigger of blender.

CAUTION

- DIETHYLENE GLYCOL MONOMETHYL ETHER (DIEGME) IS SLIGHTLY TOXIC IF SWALLOWED AND MAY CAUSE EYE REDNESS, SWELLING AND IRRITATION. IT IS ALSO COMBUSTIBLE. BEFORE USING THIS MATERIAL, REFER TO ALL SAFETY INFORMATION ON THE CONTAINER. ASSURE THE ADDITIVE IS DIRECTED INTO THE FLOWING FUEL STREAM WITH THE ADDITIVE FLOW STARTED AFTER THE FUEL FLOW STARTS AND STOPPED BEFORE FUEL FLOW STOPS. DO NOT ALLOW CONCENTRATED ADDITIVE TO CONTACT COATED INTERIOR OF FUEL TANK OR AIRPLANE PAINTED SURFACE.
- USE NOT LESS THAN 20 FLUID OUNCES OF ADDITIVE PER 156 GALLONS OF FUEL OR MORE THAN 20 FLUID OUNCES OF ADDITIVE PER 104 GALLONS OF FUEL.

PROCEDURE FOR CHECKING FUEL ADDITIVES

1. Prolonged storage of the airplane will result in a water buildup in the fuel which "leaches out" the additive. An indication of this is when an excessive amount of water accumulates in the fuel tank sumps. The concentration can be checked using an anti-icing additive concentration test kit available from Cessna Aircraft Company, Citation Marketing Division, Wichita, KS 67277. It is imperative that the instructions for the test kit be followed explicitly when checking the additive concentration. The concentrations by volume for EGME/DIEGME shall be 0.10 percent minimum and 0.15 percent maximum, either individually or mixed in a common tank. Fuel, when added to the tank, should have a minimum concentration of 0.10 percent by volume.

OXYGEN SYSTEM

Oxygen for flight crew and passengers is supplied from a 64-cubic foot oxygen cylinder. The oxygen cylinder pressure gage is located on the instrument panel. Refer to the oxygen utilization chart for duration of oxygen supply (Figure 3-3).

A three-position oxygen control switch (OXYGEN CONTROL VALVE) is located on the pilot's left console. The three positions are CREW ONLY/NORMAL/MANUAL DROP. In the NORMAL position, if the cabin altitude exceeds approximately 14,000 feet, the passenger masks will automatically drop. Oxygen will flow to these masks when the lanyard is pulled as the mask is donned. Therapeutic oxygen may be supplied to the passengers at any cabin altitude by placing the OXYGEN CONTROL VALVE selector in the MANUAL DROP position. This will cause all masks in the cabin to deploy. Oxygen flow may be shut off from passenger masks by positioning the oxygen priority valve to the CREW ONLY position.

WARNING

- **NO SMOKING WHEN OXYGEN IS BEING USED OR FOLLOWING USE OF PASSENGER OXYGEN UNTIL LANYARDS HAVE BEEN REINSTALLED.**
- **DUE TO HUMAN PHYSIOLOGICAL LIMITATIONS, THE PASSENGER OXYGEN SYSTEM IS NOT SATISFACTORY FOR CONTINUOUS OPERATION ABOVE 25,000 FEET CABIN ALTITUDE AND THE CREW OXYGEN SYSTEM IS NOT SATISFACTORY FOR CONTINUOUS OPERATION ABOVE 37,000 FEET CABIN ALTITUDE. INDIVIDUAL PHYSIOLOGICAL LIMITATIONS MAY VARY. IF CREW OR PASSENGERS EXPERIENCE HYPOXIC SYMPTOMS, DESCEND TO A LOWER CABIN ALTITUDE.**

OXYGEN MASKS

The oxygen mask is a quick donning sweep-on mask with a microphone and regulator attachment. The mask is a diluter demand with pressure breathing available by selecting the EMER position. The crew member is assured that oxygen is being received when no restriction to breathing is present with the mask donned and in the 100% position. Selection of the EMER position will provide a steady flow of pressurized oxygen in the face cone. To qualify as a quick donning mask, the mask must be properly stowed in the retainer located on the cabin divider wall. To conserve oxygen when using the mask, the regulator may be set to normal if the cabin altitude is below 20,000 feet.

When using an oxygen mask for smoke protection, 100% position should be selected. The emergency position may be used with the oxygen mask.

(Continued next page)

OXYGEN MASK MIC AND HEADSET MIC

A two-position toggle switch is provided on the pilot's and copilot's side consoles. The switch is marked MIC OXY MASK and MIC HEAD SET. Depressing microphone button on the appropriate control wheel allows a crew member to transmit through the headset microphone or oxygen mask microphone, whichever is selected.

NOTE

Cockpit masks are assumed to be at the normal setting at 20,000 feet cabin altitude with a respiratory rate of 10 liters per minute - body temperature pressure saturated and at 100% setting at and above 25,000 feet.

STANDARD OXYGEN MASK AND 64-CUBIC FOOT CYLINDER

AVAILABLE TIME IN MINUTES								
CABIN ALTITUDE	1 COCKPIT	2 COCKPIT	2 COCKPIT 2 CABIN	2 COCKPIT 4 CABIN	2 COCKPIT 6 CABIN	2 COCKPIT 8 CABIN	2 COCKPIT 10 CABIN	2 COCKPIT 11 CABIN
8,000	1684	842	150	83	57	43	35	32
10,000	1882	941	154	84	58	44	36	32
15,000	2000	1000	159	86	59	45	36	33
20,000	1455	727	153	85	59	45	37	34
25,000	525	262	113	72	53	42	34	32
30,000	717	359						
34,000	914	457						
35,000	970	485						
37,000	1103	552						

Figure 3-3

FLIGHT INTO ICING

Flight into known icing is the intentional flight into icing conditions that are known to exist by either visual observation or pilot weather report information. Icing conditions exist any time the indicated RAT is +10°C or below, and visible moisture in any form is present. Cessna Citations, which have installed properly operating anti-ice and deice equipment, are approved to operate in maximum intermittent and maximum continuous icing conditions as defined by FAR 25, Appendix C. The equipment has not been designed to provide protection against freezing rain or severe conditions of mixed or clear ice. During all operations, the pilot is expected to exercise good judgement and be prepared to alter the flight plan, i.e. exit icing, if conditions exceed the capability of the aircraft and equipment.

Ice accumulations significantly alter the shape of airfoils and increase the weight of the aircraft. Flight with ice accumulated on the aircraft will increase stall speeds and alter the speeds for optimum performance. Flight at high angle-of-attack (low airspeed) can result in ice building on the underside of the wings and the horizontal tail aft of areas protected by boots or leading edge anti-ice systems. Minimum airspeed for sustained flight in icing conditions (except approach and landing) is 160 KIAS. Prolonged flight with the flaps and/or landing gear extended is not recommended. Trace or light amounts of icing on the horizontal tail can significantly alter airfoil characteristics which will affect stability and control of the aircraft.

Freezing rain and clear ice will be deposited in layers over the entire surface of the airplane and can "run back" over control surfaces before freezing. Rime ice is an opaque, granular and rough deposit of ice that usually forms on the leading edges of wings, tail surfaces, pylons, engine inlets, antennas, etc.

THE SAFE FLIGHT ANGLE-OF-ATTACK/STALL WARNING SYSTEM

The Safe Flight Angle-of-Attack (AOA)/Stall Warning System incorporates a dual mode: Normal mode and Ice mode. On the ground, changing from Normal mode to Ice mode is delayed until after the airplane has been airborne for 150 seconds (+/- 30s). In flight switching between modes is immediate and indications change accordingly when engine anti-ice is selected ON or OFF.

NORMAL MODE

Stick shaker activation, angle of attack meter, angle of attack indexer (as installed) and low airspeed awareness are all referenced to standard airplane stall speeds.

ICE MODE

Activated when either or both engine anti-ice switches are ON. Stick shaker activation, angle of attack meter, angle of attack indexer (as installed) and low airspeed awareness are all referenced to in the standard airplane stall speeds plus 5 knots. This is to account for residual airframe ice present during or after an icing encounter.

ANTI-ICE AND DEICE SYSTEMS

This airplane is approved for flight into icing conditions.

The anti-ice system consists of bleed air heated engine inlets, wing leading edge segments ahead of each engine, bullet nose, stators, windshields (left and right), electrically heated pitot tubes, static ports and angle-of-attack probe. The wing outboard of the bleed air heated panels and the horizontal stabilizer are deiced by pneumatic boots. Windshield alcohol anti-ice is also provided as a backup system for the left windshield.

All anti-ice systems should be turned on when operating in visible moisture and the indicated RAT is +10°C or below.

NOTE

- Icing conditions exist when the indicated RAT on the ground and for takeoff is +10°C or below; the indicated RAT inflight is +10°C or below; and visible moisture in any form is present (such as clouds, fog with visibility of one mile or less, rain, snow, sleet or ice crystals.)
- Icing conditions also exist when the indicated RAT on the ground and for takeoff is +10°C or below when operating on ramps, taxiways or runways where snow, ice, standing water, or slush may be ingested by the engines or freeze on engine nacelles or engine sensor probes.

ANTI-ICE AND DEICE SYSTEMS (Continued)**ENGINE ANTI-ICE SYSTEM**

Bleed air flows continuously through the bullet nose whether the anti-ice system is activated or not. When the engine anti-ice switches (one for each engine) are positioned to LH and/or RH, bleed air flows through the applicable engine inlet, engine stators and wing section ahead of engine if the throttle position is above 63% N_2 . If sufficient bleed air flow is not available to maintain the proper engine inlet and wing temperature, the stator bleed air valve does not open or the throttle lever is below approximately 63% N_2 , the engine ice fail light on the annunciator panel will illuminate. In flight an initial setting of greater than 80% N_2 is required to extinguish the anti-ice fail annunciator. The annunciator will remain extinguished unless N_2 is reduced below 75%. In case of engine failure, position the engine anti-ice switch of the failed engine to XFD to allow bleed air from opposite engine to flow through both wing sections ahead of each engine. Operation of the system may be checked by observing engine ITT and fan speed when the engine anti-ice is turned on. The ITT should increase and the fan speed should decrease. If the check is made on the ground, it will require approximately two minutes to extinguish the engine ice fail light with turbine speed set at approximately 70%. Maximum engine power setting values are reduced when using anti-ice, as shown in Section IV. Loss of electrical power to the valve supplying flow to the inlets results in the valve opening; thus, assuring anti-ice capability. The crossfeed (XFD) position of the engine anti-ice switch is designed to provide wing anti-ice protection to both wings in the event of an inoperative engine. Crossfeed (XFD) position disables the selected inlet temperature and stator valve inputs to the anti-ice failure annunciators. In a multi-engine situation this could result in a false indication of satisfactory operation, if the failure was actually inlet or stator bleed related.

SURFACE DEICE

The pneumatic boots are activated by a three-position (AUTO, OFF, MANUAL) surface deice switch, which is spring-loaded to OFF. The system is normally put into operation by momentarily placing the surface deice switch to AUTO, which will cause the system to complete one 18-second cycle and stop. During the first third of a cycle, pneumatic pressure inflates the lower deice tubes in both wings and the left horizontal stabilizer deice boot for six seconds. This is followed by six seconds of complete system deflation. During the last third of the cycle, pneumatic pressure inflates the upper deice tubes in both wings and the right horizontal stabilizer deice boot for six seconds. The boots then deflate as vacuum is applied continuously when the boots are not being cycled.

Once a system cycle has been started, it cannot be stopped by the control switch. It may be stopped by pulling the surface deice circuit breaker, which should be accomplished only as an emergency measure in case of a timer malfunction in which the system does not automatically terminate a cycle.

Proper operation of the surface deice system is indicated by the SURFACE DEICE light illumination on the annunciator panel. The light will come on when the pressure reaches the proper value during the inflation portions of the boot cycle and should go off for approximately six seconds between boot inflations and after the cycle is completed.

(Continued next page)

ANTI-ICE AND DEICE SYSTEMS (Continued)

Manual operation of the system may be accomplished by holding the control switch in the MANUAL position. As long as the control switch is held in MANUAL, all pneumatic tubes in the system will inflate simultaneously, and will deflate when the switch is released.

If the switch is placed in MANUAL during a cycle of automatic operation, MANUAL will override the AUTO function and all the tubes will simultaneously inflate, but the automatic cycle will continue to time out.

NOTE

Manual activation of the surface deice system may cause a mild pitch transient.

The surface deice system should be used when ice buildup is estimated to be between 1/4 and 1/2 inch thickness. Early activation of the boots may result in ice bridging on the wing. If ice is allowed to accumulate in excess of one inch, boot cycling may not clear it. Wing inspection lights are provided to illuminate the wings to observe ice buildup during night flight.

If icing conditions are anticipated after takeoff, operation of the pneumatic boots should be functionally checked prior to takeoff. The pilot should also check the system for proper operation prior to entering areas in which icing may be encountered.

The deice boots should not be operated when indicated outside air temperature (IOAT) is below -40°C (-40°F) since cracking of the boots may occur below that temperature and the boots may not fully deflate.

During icing encounters, the crew should monitor the wings for any evidence of a failed deice boot. During normal operation some ice will form on unprotected areas.

CAUTION

IN ICING CONDITIONS, A SMALL AMOUNT OF RESIDUAL ICE WILL FORM ON UNPROTECTED AREAS. THIS IS NORMAL, BUT CAN CAUSE AN INCREASE IN STALL SPEEDS. WHEN ANY AMOUNT OF RESIDUAL ICE IS VISIBLE, THE STALL SPEEDS IN FIGURE 4-7 INCREASE BY 5 KNOTS; THE V_{REF}/V_{APP} SPEEDS, LANDING DISTANCES AND THE MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS MUST BE ADJUSTED IN ACCORDANCE WITH FIGURE 4-32.

(Continued next page)

ANTI-ICE AND DEICE SYSTEMS (Continued)**WINDSHIELD ANTI-ICE**

The windshield bleed air system provides windshield anti-ice under all normal operating conditions. This system also provides external windshield defog and rain removal. The system supplies engine bleed air through an electrically actuated pressure regulating shutoff valve in the tailcone of the airplane and manually positioned valves which regulate air to each windshield. The manual valves are located at each bleed air nozzle and are left in the OFF position for all normal operation. A check should be made to ensure that the rain removal knob is pushed IN for windshield anti-icing. When windshield anti-icing is required, the W/S bleed valves are turned ON and the W/S bleed switch is turned to LO if the indicated OAT is above -18°C or to HI if the indicated OAT is -18°C or below. Normal system operation is indicated by an increase in air noise as the bleed air discharges from the nozzles. A temperature sensor is located near the discharge nozzles and automatically controls the windshield bleed air temperature by modulating crossflow air through a heat exchanger in the tailcone. An additional temperature sensor is located in the bleed air line, which automatically actuates the electrical shutoff valve and illuminates the windshield air overheat annunciator light should the bleed air temperature exceed the normal control value. This condition should not occur unless a sustained high power, low airspeed condition is maintained or a system malfunction occurs. If the windshield air overheat light illuminates, the manual bleed air valves should be modulated to reduce the flow. If the light remains on for over 60 seconds, position the manual valves to OFF. The windshield air overheat light will also illuminate if the electrical shutoff valve in the tailcone opens with the windshield bleed air switch in the OFF position.

Self-test of the temperature monitor system is normally accomplished during the preflight warning systems check by turning the windshield bleed air switch to either the HI or LO position and selecting the W/S temperature position on the rotary test switch. Proper system function is verified by illumination of the W/S AIR O'HEAT annunciator light. Self-tests may also be accomplished in flight, if desired.

If the windshield bleed air anti-ice system fails, a backup alcohol anti-ice system is provided for the left windshield only. Sufficient alcohol is provided for ten minutes of operation; therefore, plans should be made to leave the icing environment without delay.

PITOT-STATIC AND ANGLE OF ATTACK ANTI-ICE

Electric heating elements are provided in the pilot's, copilot's and standby pitot tubes; pilot's, copilot's, and standby static ports, and the angle-of-attack probe. The pitot static anti-ice switch actuates all of these elements. Operation may be checked on preflight by turning the switch ON for approximately 30 seconds, then OFF; then feel each element during the external inspection. Ground operation of the pitot-static heat should be limited to less than two minutes to avoid damage to the pitot tubes and angle-of-attack probe. Failures of pitot and static heating elements and of the angle-of-attack probe element are annunciated by PS/HTR OFF LH or RH, STBY PS HTR OFF and AOA HTR FAIL lights, respectively, in the annunciator panel.

COLD WEATHER OPERATIONS

COLD SOAK

Operation of the aircraft has been demonstrated after prolonged exposure to ground ambient temperature of -30°C (-22°F). This was the minimum temperature achieved in cold weather testing, and is not considered limiting. The following operational procedures are recommended after cold soak.

1. If the aircraft has been cold soaked at temperatures below -12°C (10°F) and the engines have not been preheated, the use of external power or warming the battery to -12°C (10°F) or warmer is recommended. This temperature may be checked with the battery temperature gauge. Proper battery warmup may require extended application of heat to the battery. Minor engine oil leaks may occur after start at extremely cold temperatures if the engines have not been preheated. Any leak should stop once the oil seals have warmed up. Any visible leak must stop prior to flight.
2. The W/S TEMP annunciator may not test after cold soak at extremely cold temperatures. If this occurs, repeat the test after the cabin has warmed up. The test must be completed prior to flight.
3. The avionics may require warmup after cold soak. Over twenty minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by the following:
 - a. Frequency/code displays illuminate normally with pilot control of brightness.
 - b. Audio reception is available on all applicable avionics. In the absence of a suitable station, background static on each applicable avionics radio is an acceptable demonstration of reception.
4. Do not set the parking brake if the anticipated cold soak temperature is -15°C (5°F) or less.

RAIN REMOVAL

The windshield bleed air system provides rain removal during flight and ground operations. This system also serves as the windshield anti-ice system when used as described in the windshield anti-ice paragraph of this section.

When rain removal is desired, the W/S BLEED switch should be positioned to LOW and the rain removal push-pull knob pulled out. A check should be made to ensure the WINDSHIELD BLEED AIR rotary controls are in the MAX position.

The engine ignition should be turned ON when flying in heavy rain.

WATER/SLUSH OPERATION

The airplane should not be operated when standing water/slush depths exceed 0.5 inch. If the 0.5 inch depth is inadvertently exceeded, compressor surges (bangs) may result.

HYDRAULIC SYSTEM

Hydraulic system pressure is supplied by one pump on each engine. The system is pressurized to 1500 PSI only during actuation of the landing gear, flaps, speed brakes or thrust reversers. Only Skydrol 500A, B, B-4, C, LD-4, or Hyjet, Hyjet W, III, IV, IVA or IVA Plus are to be used as fluid. Normal operation is indicated by the HYD PRESS ON light on the annunciator panel. When a cycle of the gear, flaps, speed brakes or thrust reversers is complete, the light should go out. Should the system remain pressurized for an extended time, the speedbrake, flap, landing gear or thrust reversers circuit breaker should be pulled as necessary to relieve system pressure.

THRUST REVERSERS

The thrust reversers are of the "target door" design which form the aft portion of the nacelle when in the stowed position. Their support structure attaches directly to the aft engine bypass duct mounting ring. Each reverser is actuated by two hydraulic cylinders to deploy and/or stow. The reversers are locked into the stowed position by the design which incorporates an overcenter feature in the actuation linkage. The hydraulic power required for operation is provided by the standard airplane system through the thrust reverser isolation and control valves. Activation of the system is by pilot operation of the thrust reverser throttle levers mounted on the primary throttle levers. The reversers can only be deployed when the primary throttle levers are in the idle thrust position and the airplane is on the ground. The thrust reverser lever(s) should not be placed in the idle reverse detent position in flight since a single failure of either squat switch could permit deployment of the thrust reverser(s). If the thrust reverser lever is inadvertently placed in the idle reverse detent position in flight, the airplane MASTER WARNING light will flash along with the illumination of the ARM and HYD PRESS ON annunciator lights.

A MASTER WARNING light when thrust reversers are moved to deploy on the ground means that neither landing gear squat switch has activated. To ensure actuation of the squat switches and to eliminate any delay in the deployment of the thrust reversers, it is recommended that the speed brakes be extended immediately following touchdown.

Three reverser indicator lights for each reverser are mounted on the panel for monitoring reverse functions: ARM light, UNLOCK light, and DEPLOY light. The amber ARM light indicates hydraulic pressure to the control valve. The amber UNLOCK light indicates the thrust reversers are not in the fully stowed position. The white DEPLOY light indicates that the thrust reversers are in the full deploy position. The DEPLOY light shall illuminate in less than 1.5 seconds after the hydraulic UNLOCK light illuminates. An erroneous sequencing or a delay in the thrust reverser lights indicates a failure in the thrust reverser system. Either or both conditions require a maintenance check before further flight.

WARNING

**DO NOT ATTEMPT TO FLY THE AIRPLANE IF THE THRUST REVERSER
PREFLIGHT CHECK IS UNSUCCESSFUL.**

(Continued next page)

THRUST REVERSERS (Continued)

After deployment, power may be increased by moving the thrust reverser throttle levers aft for maximum reverse thrust. For convenience, STOPS have been installed on the thrust reverser levers and are set to limit the reverse fan speed to 80.1% RPM at sea level at -18°C. Fan speed will be less than 80.1% RPM above -18°C. This will allow the pilot to keep his attention on the landing rollout instead of diverting his attention to the reverse power settings, except in abnormal ambient temperature condition (below -18°C) in which the pilot must limit reverse fan speed to 76.6% RPM.

In the event of an inadvertent thrust reverser deployment, an automatic throttle retarding device will bring the throttle to approximately idle thrust depending on the amount of throttle friction that has been applied. After this device has activated, the throttle lever can be advanced resulting in corresponding reverse thrust. If the pilot attempts to override the retraction mechanism, the throttle cable system could be damaged. Subsequent reduction of the throttle lever to idle will not result in engine flameout unless mechanical damage has resulted from the deployment.

WARNING

DO NOT ATTEMPT TO OVERRIDE THE RETRACTION MECHANISM OR ADVANCE THE THROTTLE AFTER RETRACTION. THIS COULD RESULT IN A DANGEROUS ASYMMETRICAL THRUST CONDITION.

An emergency stow switch is installed on the fire tray for each thrust reverser. They are used only for stowing the reversers when they will not stow through the primary thrust reverser controls. Each emergency stow switch receives its electrical power through the opposite thrust reverser circuit breaker. The emergency stow function can be checked on the ground by deploying the reversers normally and then actuating each emergency stow switch. When the emergency stow switch is actuated, the DEPLOY and UNLOCK light shall extinguish and the ARM and HYD PRESS ON light will remain illuminated. Return the thrust reverser lever to stowed position, then turn each emergency stow switch off. All lights shall be extinguished.

The nose wheel must be on the ground and forward pressure maintained on the control column prior to and during the deployment and actuation of the thrust reversers. Single engine reversing has been demonstrated during normal landings and is easily controllable. Also for an increased aerodynamic drag during the landing roll, it is suggested that the thrust reversers remain in the idle deployed position below 60 KIAS. Care should be taken on runways with loose dirt, gravel or grit as idle reverse at low speed can cause foreign object damage.

ELECTRICAL SYSTEM

DC power is supplied by a 300-ampere starter-generator unit on each engine and a 40 ampere-hour nickel cadmium battery. Engine ground starts may be accomplished by use of either external power or the airplane battery for the first engine start. The second engine normally uses the generator from the operating engine to supply electrical power for the start. External power or the airplane battery may be used for starting the second engine, if desired, by turning the generators to the off position. Generator assist start capability is disabled in flight; therefore, all starter assist airstarts are from the battery. One generator is capable of supplying all standard electrical requirements in flight in the event of a generator failure. A protected DC power path is included which provides bus extension to the opposite circuit breaker panel. This is identified on each circuit breaker panel as RH and LH CB PANEL. The bus extensions feed DC power from one side to the bus extension on the opposite circuit breaker panel in order to allow logical grouping of corresponding LH and RH system circuit breakers.

AC power is supplied by either of two 375 volt-ampere inverters powered from 15 ampere circuit breakers on the LH and RH extension (DC) bus and is controlled by the AVIONIC POWER switch and a single INV 1/NORM/INV 2 switch. Each inverter provides both 26 VAC and 115 VAC power. Number 1 inverter powers the number 1 26 VAC bus and the number 1 115 VAC bus. The number 2 inverter powers similar number 2 busses. If either inverter fails, the respective INVERTER FAIL light will illuminate. The pilot must select the operating inverter to cause both busses to receive power from the remaining inverter. The AC FAIL light will illuminate and the MASTER WARNING light will also flash. The MASTER WARNING light may be canceled, in this case, and the AC FAIL light will also cancel. If the second inverter should fail, the MASTER WARNING and AC FAIL light will illuminate. The AC FAIL light will not cancel.

The AC system is required to function normally prior to flight. To test the AC system, accomplish the following procedure after the gyros have fully erected.

1. AC INV 1/INV 2 Switch - INV 1.

The number 2 inverter will be turned off and the number 2 INVERTER FAIL light, AC FAIL light, and MASTER WARNING light will illuminate. The AC system must continue to operate with power from inverter number 1.

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ELECTRICAL SYSTEM (Continued)

2. AC INV 1/INV 2 Switch - INV 2.

The number 1 inverter will be turned off and the number 1 INVERTER FAIL light, AC FAIL light, and MASTER WARNING light will illuminate. The AC system must continue to operate with power from inverter number 2.

An emergency battery bus is provided to supply DC power to operate the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Altitude/Airspeed Indicator
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI		

If the battery switch is selected to EMER, only the equipment connected to the emergency bus receives DC power. The standby attitude indicator will continue to operate on its own internal battery. This battery also provides 5 volt lighting for the voltmeter and the battery temperature gage.

A battery overheat warning system is provided to warn the pilot in the event of abnormally high battery temperatures. During self-testing of the circuit by the rotary test switch, the red BATT O'TEMP and the MASTER WARNING light will flash. An internal battery temperature of 63°C (145°F) will cause the red BATT O'TEMP annunciator light to illuminate steadily and trigger the MASTER WARNING light. Battery temperatures exceeding 71°C (160°F) will cause the annunciator and the MASTER WARNING light to flash.

ELECTRICAL SYSTEM

DC power is supplied by a 300-ampere starter-generator unit on each engine and a 40 ampere-hour nickel cadmium battery. Engine ground starts may be accomplished by use of either external power or the airplane battery for the first engine start. The second engine normally uses the generator from the operating engine to supply electrical power for the start. External power or the airplane battery may be used for starting the second engine, if desired, by turning the generators to the off position. Generator assist start capability is disabled in flight; therefore, all starter assist airtasks are from the battery. One generator is capable of supplying all standard electrical requirements in flight in the event of a generator failure. A protected DC power path is included which provides bus extension to the opposite circuit breaker panel. This is identified on each circuit breaker panel as RH and LH CB PANEL. The bus extensions feed DC power from one side to the bus extension on the opposite circuit breaker panel in order to allow logical grouping of corresponding LH and RH system circuit breakers.

Power for the avionics system is controlled by three switches labeled AVIONICS POWER on the left meter panel. The right switch controls DC power to the system. The center switch controls DC power to two 375 volt-ampere inverters which individually provide AC power to their respective busses. Each inverter provides both 26 VAC and 115 VAC power. Number 1 inverter powers the number 1 26 VAC bus and the number 1 115 VAC bus. The number 2 inverter powers similar number 2 busses. If either inverter fails, the respective INVERTER FAIL light will illuminate and automatic switching will occur, causing both busses to receive power from the remaining inverter. The AC FAIL light will illuminate and the MASTER WARNING light will also flash. The MASTER WARNING light may be canceled, in this case, and the AC FAIL light will also cancel. If the second inverter should fail, the MASTER WARNING and AC FAIL light will illuminate. The AC FAIL light will not cancel. The left avionics switch is labeled INV 1/TEST/INV 2. It is used to test the inverter switching system and is spring-loaded to the OFF (center) position.

The AC system is required to function normally prior to flight. To test the AC system, accomplish the following procedure after the gyros have fully erected.

1. AC Test Switch - INV 1.

The number 1 inverter will be turned off and the number 1 INVERTER FAIL light, AC FAIL light, and MASTER WARNING light will illuminate. The AC system must continue to operate with power from inverter number 2.

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ELECTRICAL SYSTEM (Continued)

2. AC Test Switch - INV 2.

The number 2 inverter will be turned off and the number 2 INVERTER FAIL light, AC FAIL light, and MASTER WARNING light will illuminate. The AC system must continue to operate with power from inverter number 1.

CAUTION

IF ONE "INVERTER FAIL" ANNUNCIATOR ILLUMINATES, PLACING THE "INV TEST" SWITCH TO THE OPPOSITE INVERTER WILL MOMENTARILY TURN OFF THE SELECTED INVERTER CAUSING LOSS OF AC POWER WITH THE ATTENDANT FAILURE INDICATIONS.

An emergency battery bus is provided to supply DC power to operate the following equipment:

COMM 1	LH and RH N ₁ Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Altitude/Airspeed Indicator
DG 1	Pilot's and Copilot's Audio Panels	Vibrator
Standby HSI		

If the battery switch is selected to EMER, only the equipment connected to the emergency bus receives DC power. The standby attitude indicator will continue to operate on its own internal battery. This battery also provides 5 volt lighting for the voltmeter and the battery temperature gage.

A battery overheat warning system is provided to warn the pilot in the event of abnormally high battery temperatures. During self-testing of the circuit by the rotary test switch, the red BATT O'TEMP and the MASTER WARNING light will flash. An internal battery temperature of 63°C (145°F) will cause the red BATT O'TEMP annunciator light to illuminate steadily and trigger the MASTER WARNING light. Battery temperatures exceeding 71°C (160°F) will cause the annunciator and the MASTER WARNING light to flash.

HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM

The Honeywell Primus-1000 flight director and autopilot systems provide complete flight guidance for Category I operations using the flight director or autopilot systems. Only the Honeywell Primus-1000 Flight Director system is approved for flight guidance for Category II operations. The airborne instruments and equipment meet the performance standards of Attachment 2 of Advisory Circular 91-16 dated 8/7/67.

NOTE

The above FAA approval does not constitute approval to conduct Category II operations. Crew qualifications and Category II manuals are required for full Category II operation.

This installation is referred to by Honeywell as "Phase III." Refer to the Honeywell Pilot's manual, "Primus-1000 Integrated Avionics System for the Citation Ultra" for system description and operation.

In addition to providing basic attitude control with the autopilot, the systems provides a heading mode, VOR enroute nav mode, VOR/localizer/back course approach mode and glideslope mode. Altitude hold, speed hold (indicated airspeed or mach), vertical speed hold and vertical nav mode along with touch control steering is also provided. The autopilot may be used in all phases of flight except for takeoff and landing, and approach below landing approach minimums. When conducting autopilot coupled heading operations, the roll mistrim annunciator (AP ROLL MISTRIM) may illuminate momentarily when the heading bug is slewed from a left turn immediately followed by a right turn or vice-versa.

NOTE

- During VOR coupled approaches with DME inoperative or unavailable, intercepts of the final approach course inside (3) three nautical miles of the VOR should be avoided. Intercepting the final approach course inside 3 nm will defeat Over Station Sensor (OSS) logic built into the autopilot, which may result in excessive 'S turning' over the VOR.
- When the FD/AP is coupled to the VOR, another lateral mode must be selected prior to switching VOR NAV frequencies. HDG mode may be used after synchronizing HDG bug to the current airplane heading. Alternately, basic ROLL may also be used.

After initial power on, the flight director will be armed but the flight command bars will not be in view. The command bars can be brought into view by selecting a mode on the mode select panel or by pressing the go-around (GA) button. The command bars can be biased out of view by de-selecting all mode currently illuminated on the mode select panel or by pressing the GA button followed by the TCS button.

All three axes of the autopilot are turned on by selecting AP ENGAGE on the autopilot control panel. Selecting YD ENGAGE on the autopilot control panel provides separate yaw damping capability and does not affect flight director operation. The yaw damper may be used for all phases of flight except takeoff and landing.

The autopilot and/or yaw damper will disengage as a result of any of the following:

1. Autopilot/Trim Disengage Switch - PRESS.
2. Electric Trim Button - PRESS (disconnects pitch and roll axis).
3. Go-Around Switch - PRESS.

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■ HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

The autopilot is also automatically turned off if power is removed from the system or part of the system. Any time the autopilot is turned off, a warning horn will sound for one second. Also, when the autopilot is intentionally turned off, a light on the pilot's and copilot's panel illuminates for one second. An inadvertent autopilot disconnect causes the light on the pilot's and copilot's panels to illuminate until the disconnect switch on either control wheel is pushed or the electric trim button is pushed. If the autopilot DC power is lost, the autopilot will disengage and the AP OFF light will illuminate for one second.

■ The Primus-1000 system includes dual EFIS primary flight displays (PFDs) with a single multi-function display (MFD). To select the source of navigation information to the course deviation indicator (CDI) and source of flight guidance to the flight director, each pilot can cycle between NAV 1 and NAV 2 by means of the NAV button or select FMS by depressing the FMS button on the DC-550 Display Controller. In the case of dual FMS installations, the FMS button will cycle between FMS 1 and FMS 2. The CDI needle and appropriate information will be green in color if both pilots have selected their own 'on side' NAV source. If both pilots have selected a single NAV source (NAV 1 or NAV 2) or if both pilots have selected 'cross side' NAV sources the CDI needle will be amber in color. If one pilot has selected FMS the CDI needle and appropriate information will be magenta in color. If both pilots have selected FMS as a single source of navigation information the CDI will be amber in color.

Each PFD has two internal RMI needles which may be selected in the HSI portion of the display. The cyan colored single bar displays NAV 1, ADF 1 (in single or dual ADF installations), and FMS 1 (in single or dual FMS installations). The white colored double needle bar displays NAV 2, ADF 2 (ADF 1 in single ADF installations), and FMS 2 (FMS 1 in single FMS installations). In addition, an OFF position is provided for each needle to remove it from the PFD.

Vertical navigation is provided to the flight director by means of the vertical navigation (VNAV) computer which may be programmed by accessing the VNAV menu through controls on the MFD bezel. The vertical navigation system works in conjunction with NAV 1 or 2 (Vortac) or FMS systems depending on the current navigation source selected on the EFIS display controller. In the case of FMS waypoint source VNAV problems will always be in reference to the current 'TO' waypoint. The data entry menu for VNAV problem set up in the MFD will be slightly different for VORTAC and FMS WAYPOINT modes or operation since station elevation is not required for FMS WAYPOINT problems. After mode engagement, the deviation from the selected vertical path will be displayed on the selected side (pilot's or copilot's) PFD. Only one side may access the single VNAV computer at a time. A one-dot deviation represents approximately a 250-foot deviation from the desired angle. The system will not allow selection of angles of climb or descent in excess of six degrees. Angles greater than three degrees should only be used for altitude changes greater than 3000 feet. For VNAV problems where the angle is set steeper than the current default angle ('slew ahead'), a vertical track alert (VTA) light and horn will activate approximately one minute prior to reaching the start of climb/descent. The VTA light and the VNAV annunciation in the mode select panel will flash until the pilot pushes the VNAV mode select button a second time to 'accept' the impending altitude change. The pilot has until the VNAV capture point to accept this altitude change or if nothing is done, no mode change will occur and the VNAV problem will be cancelled.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM

The Honeywell Primus-1000 flight director and autopilot systems provide complete flight guidance for Category I operations using the flight director or autopilot systems. Only the Honeywell Primus-1000 Flight Director system is approved for flight guidance for Category II operations. The airborne instruments and equipment meet the performance standards of Attachment 2 of Advisory Circular 91-16 dated 8/7/67.

NOTE

The above FAA approval does not constitute approval to conduct Category II operations. Crew qualifications and Category II manuals are required for full Category II operation.

This installation is referred to by Honeywell as "Phase II." Airplanes incorporating SB560-34-61 will have Phase III improved capabilities while retaining the Phase II display control hardware. Refer to the Honeywell Pilot's manual, "Primus-1000 Integrated Avionics System for the Citation Ultra" for system description and operation.

In addition to providing basic attitude control with the autopilot, the systems provides a heading mode, VOR enroute nav mode, VOR/localizer/back course approach mode and glideslope mode. Altitude hold, speed hold (indicated airspeed or mach), vertical speed hold and vertical nav mode along with touch control steering is also provided. The autopilot may be used in all phases of flight except for takeoff and landing, and approach below landing approach minimums. When conducting autopilot coupled heading operations, the roll mistrim annunciator (AP ROLL MISTRIM) may illuminate momentarily when the heading bug is slewed from a left turn immediately followed by a right turn or vice-versa.

NOTE

- During VOR coupled approaches with DME inoperative or unavailable, intercepts of the final approach course inside (3) three nautical miles of the VOR should be avoided. Intercepting the final approach course inside 3 nm will defeat Over Station Sensor (OSS) logic built into the autopilot, which may result in excessive 'S turning' over the VOR.
- When the FD/AP is coupled to the VOR, another lateral mode must be selected prior to switching VOR NAV frequencies. HDG mode may be used after synchronizing HDG bug to the current airplane heading. Alternately, basic ROLL may also be used.

After initial power on, the flight director will be armed but the flight command bars will not be in view. The command bars can be brought into view by selecting a mode on the mode select panel or by pressing the go-around (GA) button. The command bars can be biased out of view by de-selecting all mode currently illuminated on the mode select panel or by pressing the GA button followed by the TCS button.

All three axes of the autopilot are turned on by selecting AP ENGAGE on the autopilot control panel. Selecting YD ENGAGE on the autopilot control panel provides separate yaw damping capability and does not affect flight director operation. The yaw damper may be used for all phases of flight except takeoff and landing.

The autopilot and/or yaw damper will disengage as a result of any of the following:

1. Autopilot/Trim Disengage Switch - PRESS.
2. Electric Trim Button - PRESS (disconnects pitch and roll axis).
3. Go-Around Switch - PRESS.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

The autopilot is also automatically turned off if power is removed from the system or part of the system. Any time the autopilot is turned off, a warning horn will sound for one second. Also, when the autopilot is intentionally turned off, a light on the pilot's and copilot's panel illuminates for one second. An inadvertent autopilot disconnect causes the light on the pilot's and copilot's panels to illuminate until the disconnect switch on either control wheel is pushed or the electric trim button is pushed. If the autopilot DC power is lost, the autopilot will disengage and the AP OFF light will illuminate for one second.

The Primus-1000 system includes dual EFIS primary flight displays (PFDs) with a single multi-function display (MFD). To select the source of navigation information to the course deviation indicator (CDI) and source of flight guidance to the flight director, each pilot can cycle between NAV 1 and NAV 2 by means of the NAV button or select FMS by depressing the FMS button on the DC-550 Display Controller. In the case of dual FMS installations, the external FMS button on the instrument panel will cycle between FMS 1 and FMS 2. The CDI needle and appropriate information will be green in color if both pilots have selected their own 'on side' NAV source. If both pilots have selected a single NAV source (NAV 1 or NAV 2) or if both pilots have selected 'cross side' NAV sources the CDI needle will be amber in color. If one pilot has selected FMS the CDI needle and appropriate information will be magenta in color. If both pilots have selected FMS as a single source of navigation information the CDI will be amber in color.

Each PFD has two internal RMI needles which may be selected in the HSI portion of the display. NAV 1, ADF 1, or FMS may be selected on the cyan colored single bar needle. NAV 2 or ADF 2 (if installed) may be selected on the white colored double bar needle. In addition, an OFF position is provided for each needle to remove it from the PFD. If only one ADF is installed, the ADF 2 needle will be inoperative.

Vertical navigation is provided to the flight director by means of the vertical navigation (VNAV) computer which may be programmed by accessing the VNAV menu through controls on the MFD bezel. The vertical navigation system works in conjunction with NAV 1 or 2 (Vortac) or FMS systems depending on the current navigation source selected on the EFIS display controller. In the case of FMS waypoint source VNAV problems will always be in reference to the current 'TO' waypoint. The data entry menu for VNAV problem set up in the MFD will be slightly different for VORTAC and FMS WAYPOINT modes or operation since station elevation is not required for FMS WAYPOINT problems. After mode engagement, the deviation from the selected vertical path will be displayed on the selected side (pilot's or copilot's) PFD. Only one side may access the single VNAV computer at a time. A one-dot deviation represents approximately a 250-foot deviation from the desired angle. The system will not allow selection of angles of climb or descent in excess of six degrees. Angles greater than three degrees should only be used for altitude changes greater than 3000 feet. For VNAV problems where the angle is set steeper than the current default angle ('slew ahead'), a vertical track alert (VTA) light and horn will activate approximately one minute prior to reaching the start of climb/descent. The VTA light and the VNAV annunciation in the mode select panel will flash until the pilot pushes the VNAV mode select button a second time to 'accept' the impending altitude change. The pilot has until the VNAV capture point to accept this altitude change or if nothing is done, no mode change will occur and the VNAV problem will be cancelled.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM

The Honeywell Primus-1000 flight director and autopilot systems provide complete flight guidance for Category I operations using the flight director or autopilot systems.

This installation is referred to by Honeywell as "Phase IV". Refer to Honeywell Pilot's manual, "Primus-1000 Integrated Avionics System for the Citation Ultra" for system description and operation.

In addition to providing basic attitude control with the autopilot, the system provides heading mode, VOR enroute nav, VOR/localizer/back course approach mode and glideslope mode. Altitude hold, flight level change (FLC), vertical speed hold and vertical nav mode along with touch control steering is also provided. The autopilot may be used in all phases of flight except for takeoff and landing, and approach below landing approach minimums. When conducting autopilot coupled heading operations, the roll mistrim annunciator (AP ROLL MISTRIM) may illuminate momentarily when the heading bug is slewed from a left turn immediately followed by a right turn or vice-versa.

NOTE

- During VOR coupled approaches with DME inoperative or unavailable, intercepts of the final approach course inside (3) three nautical miles of the VOR should be avoided. Intercepting the final approach course inside 3 nm will defeat Over Station Sensor (OSS) logic built into the autopilot, which may result in excessive 'S turning' over the VOR.
- When the FD/AP is coupled to the VOR, another lateral mode must be selected prior to switching VOR NAV frequencies. HDG mode may be used after synchronizing HDG bug to the current airplane heading. Alternately, basic ROLL may also be used.

After initial power on, the flight director will be armed but the flight command bars will not be in view. The command bars can be brought into view by selecting a mode on the mode select panel or by pressing the go-around (GA) button. The command bars can be biased out of view by de-selecting all mode currently illuminated on the mode select panel or by pressing the GA button followed by the TCS button.

All three axes of the autopilot are turned on by selecting AP ENGAGE on the autopilot control panel. Selecting YD ENGAGE on the autopilot control panel provides separate yaw damping capability and does not affect flight director operation. The yaw damper may be used for all phases of flight except takeoff and landing.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

Autopilot and Yaw Damper Engagement:

PILOT ACTION	AUTOPILOT STATUS	YAW DAMPER STATUS
AUTOPILOT SWITCH: NOT ILLUMINATED - PUSH ILLUMINATED - PUSH	ENGAGE DISENGAGE	ENGAGE NO EFFECT
YAW DAMPER SWITCH: NOT ILLUMINATED - PUSH ILLUMINATED - PUSH	NO EFFECT DISENGAGE	ENGAGE DISENGAGE
AUTOPILOT/TRIM DISENGAGE SWITCH - PUSH	DISENGAGE	DISENGAGE
ELECTRIC TRIM SWITCHES - PUSH	DISENGAGE	NO EFFECT
GO-AROUND SWITCH - PUSH	DISENGAGE	NO EFFECT

The autopilot is also automatically turned off if power is removed from the system or part of the system. Any time the autopilot is turned off, a warning horn will sound for one second. Also, when the autopilot is intentionally turned off, a light on the pilot's and copilot's panel illuminates for one second. An inadvertent autopilot disconnect causes the light on the pilot's and copilot's panels to illuminate until the disconnect switch on either control wheel is pushed or the electric trim button is pushed. If the autopilot DC power is lost, the autopilot will disengage and the AP OFF light will illuminate for one second.

The Primus-1000 system includes dual EFIS primary flight displays (PFDs) with a single multi-function display (MFD). To select the source of navigation information to the course deviation indicator (CDI) and source of flight guidance to the flight director, each pilot can cycle between NAV 1 and NAV 2 by means of the NAV button or select FMS by depressing the FMS button on the DC-550 Display Controller. In the case of dual FMS installations, the FMS button will cycle between FMS 1 and FMS 2. The CDI needle and appropriate information will be green in color if both pilots have selected their own 'on side' NAV source. If both pilots have selected a single NAV source (NAV 1 or NAV 2) or if both pilots have selected 'cross side' NAV sources the CDI needle will be amber in color. If one pilot has selected FMS the CDI needle and appropriate information will be magenta in color. If both pilots have selected FMS as a single source of navigation information the CDI will be amber in color.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM

The Honeywell Primus-1000 flight director and autopilot systems provide complete flight guidance for Category I operations using the flight director or autopilot systems.

This installation is referred to by Honeywell as "Phase V". Refer to Honeywell Pilot's manual, "Primus-1000 Integrated Avionics System for the Citation Ultra" for system description and operation.

In addition to providing basic attitude control with the autopilot, the system provides heading mode, VOR enroute nav, VOR/localizer/back course approach mode and glideslope mode. Altitude hold, flight level change (FLC), vertical speed hold and vertical nav mode along with touch control steering is also provided. The autopilot may be used in all phases of flight except for takeoff and landing, and approach below landing approach minimums.

After initial power on, the flight director will be armed but the flight command bars will not be in view. The command bars can be brought into view by selecting a mode on the mode select panel or by pressing the go-around (GA) button. The command bars can be biased out of view by de-selecting all mode currently illuminated on the mode select panel or by pressing the GA button followed by the TCS button.

All three axes of the autopilot are turned on by selecting AP ENGAGE on the autopilot control panel. Selecting YD ENGAGE on the autopilot control panel provides separate yaw damping capability and does not affect flight director operation. The yaw damper may be used for all phases of flight except takeoff and landing.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

Autopilot and Yaw Damper Engagement:

PILOT ACTION	AUTOPILOT STATUS	YAW DAMPER STATUS
AUTOPILOT SWITCH: NOT ILLUMINATED - PUSH ILLUMINATED - PUSH	ENGAGE DISENGAGE	ENGAGE NO EFFECT
YAW DAMPER SWITCH: NOT ILLUMINATED - PUSH ILLUMINATED - PUSH	NO EFFECT DISENGAGE	ENGAGE DISENGAGE
AUTOPILOT/TRIM DISENGAGE SWITCH - PUSH	DISENGAGE	DISENGAGE
ELECTRIC TRIM SWITCHES - PUSH	DISENGAGE	NO EFFECT
GO-AROUND SWITCH - PUSH	DISENGAGE	NO EFFECT

The autopilot is also automatically turned off if power is removed from the system or part of the system. Any time the autopilot is turned off, a warning horn will sound for one second. Also, when the autopilot is intentionally turned off, a light on the pilot's and copilot's panel illuminates for one second. An inadvertent autopilot disconnect causes the light on the pilot's and copilot's panels to illuminate until the disconnect switch on either control wheel is pushed or the electric trim button is pushed. If the autopilot DC power is lost, the autopilot will disengage and the AP OFF light will illuminate for one second.

The Primus-1000 system includes dual EFIS primary flight displays (PFDs) with a single multi-function display (MFD). To select the source of navigation information to the course deviation indicator (CDI) and source of flight guidance to the flight director, each pilot can cycle between NAV 1 and NAV 2 by means of the NAV button or select FMS by depressing the FMS button on the DC-550 Display Controller. In the case of dual FMS installations, the FMS button will cycle between FMS 1 and FMS 2. The CDI needle and appropriate information will be green in color if both pilots have selected their own 'on side' NAV source. If both pilots have selected a single NAV source (NAV 1 or NAV 2) or if both pilots have selected 'cross side' NAV sources the CDI needle will be amber in color. If one pilot has selected FMS the CDI needle and appropriate information will be magenta in color. If both pilots have selected FMS as a single source of navigation information the CDI will be amber in color.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

Each PFD has two internal RMI needles which may be selected in the HSI portion of the display. The cyan colored single bar displays NAV 1, ADF 1 (in single or dual ADF installations), and FMS 1 (in single or dual FMS installations). The white colored double needle bar displays NAV 2, ADF 2 (ADF 1 in single ADF installations), and FMS 2 (FMS 1 in single FMS installations). In addition, an OFF position is provided for each needle to remove it from the PFD.

Vertical navigation is provided to the flight director/autopilot by means of the vertical navigation (VNAV) computer which may be programmed by accessing the single point VNAV menu through controls on the MFD bezel. The vertical navigation system works in conjunction with NAV 1 or 2 (VORTAC) systems depending on the current navigation source selected on the EFIS display controller. After mode engagement, the deviation from the selected vertical path will be displayed on the selected side (pilot's or copilot's) PFD. Only one side may access the single point VNAV computer at a time. A one-dot deviation represents approximately a 250-foot deviation from the desired flight path angle. The system will not allow selection of angles of climb or descent in excess of six degrees. Angles greater than three degrees should only be used for altitude changes greater than 3000 feet. For VNAV problems where the angle is set steeper than the current default angle ('slew ahead'), a vertical track alert (VTA) annunciator will light and horn approximately one minute prior to reaching the climb/descent. The VTA light and the VNAV annunciation in the mode select panel will flash until the pilot pushes the VNAV mode select button a second time to 'accept' the impending altitude change. The pilot has until the VNAV capture point to accept this altitude change or if nothing is done, no mode change will occur and the VNAV problem will be cancelled.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

Each PFD has two internal RMI needles which may be selected in the HSI portion of the display. The cyan colored single bar displays NAV 1, ADF 1 (in single or dual ADF installations), and FMS 1 (in single or dual FMS installations). The white colored double needle bar displays NAV 2, ADF 2 (ADF 1 in single ADF installations), and FMS 2 (FMS 1 in single FMS installations). In addition, an OFF position is provided for each needle to remove it from the PFD.

Vertical navigation is provided to the flight director/autopilot by means of the vertical navigation (VNAV) computer which may be programmed by accessing the single point VNAV menu through controls on the MFD bezel. The vertical navigation system works in conjunction with NAV 1 or 2 (VORTAC) systems depending on the current navigation source selected on the EFIS display controller. After mode engagement, the deviation from the selected vertical path will be displayed on the selected side (pilot's or copilot's) PFD. Only one side may access the single point VNAV computer at a time. A one-dot deviation represents approximately a 250-foot deviation from the desired flight path angle. The system will not allow selection of angles of climb or descent in excess of six degrees. Angles greater than three degrees should only be used for altitude changes greater than 3000 feet. For VNAV problems where the angle is set steeper than the current default angle ('slew ahead'), a vertical track alert (VTA) annunciator will light and horn approximately one minute prior to reaching the climb/descent. The VTA light and the VNAV annunciation in the mode select panel will flash until the pilot pushes the VNAV mode select button a second time to 'accept' the impending altitude change. The pilot has until the VNAV capture point to accept this altitude change or if nothing is done, no mode change will occur and the VNAV problem will be cancelled.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

Top of climb and top of descent as well as level off points will be depicted on the MFD map when VNAV is to an FMS waypoint.

NOTE

- Slewing the baro setting during an autopilot coupled VNAV problem may adversely effect tracking of the vertical deviation pointer.
- Loss of DME on the non-coupled side during single point VNAV operation will result in incorrect vertical deviation display on that side.
- Both NAV 1 and NAV 2 should be set to the same VORTAC frequency during single point VNAV operation to assure agreement between the vertical deviation scales on pilot and copilot PFD's.
- Single-point VNAV will remain armed if another vertical mode is selected for early descent prior to path capture. After level-off, a descent away from the altitude preselector will occur upon intercept of the programmed VNAV path. To prevent an undesired descent after level-off, manually disarm the VNAV mode.

The FMS may also be used to program a VNAV problem. In this case the vertical deviation indicator will be labeled 'FMS'. The flight director/autopilot will not couple to an FMS VNAV problem. The deviation indicator should be considered advisory information and another autopilot vertical mode (such as vertical speed) may be used to keep the deviation bar centered if desired.

Any horizontal mode may be selected at any time; however, if a nav mode is selected outside the capture limits, the nav mode will arm and the heading mode will automatically be selected until the Nav captures.

The P-1000 digital autopilot conducts an internal self-test immediately after initial power up. No pilot conducted test is required. However, the pilot may conduct a operational test of the autopilot as follows:

1. Engage the autopilot with the elevators and ailerons in the neutral position.
2. Rotation of the pitch wheel must result in movement of the control column in the direction of pitch wheel movement.
3. Rotation of the turn knob must result in movement control knob in the direction of the turn knob movement. Engage the heading mode with heading cursor under the lubber line. Move the heading cursor to the left of the lubber line and the control wheel should roll left.
4. Engage the altitude hold mode; then set the pilot's altimeter to a lower altitude and the control wheel should move aft. Disengage the altitude hold mode. Pull aft on the control wheel. After a short delay, the elevator trim wheel must start trimming nose down.
5. Disengage the autopilot with the AP/TRIM DISC switch on the control wheel. The autopilot must disengage and the AP OFF light must illuminate for one second.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

The electronic flight instrument system consists of three electronic display units (DUs), two display guidance computers (DGCs), two micro air data computer (MADCs), three display controllers and one radar controller.

All three electronic display units are identical and interchangeable. A conventional slip/skid indicator is attached to the bezel for each PFD. The bezel to the MFD contains push buttons to select input for VNAV, takeoff and landing speed selection. All three electronic displays use a combination of manual and photo electric dimming for various light conditions.

The display guidance computers are the heart of the system and receive all the airplane sensor inputs. The sensor information is processed and transmitted to the electronic displays.

The display controllers for the PFDs provide the means by which the pilot can select navigation and bearing sources and control the display formatting, such as full or partial compass display. The display controller for the MFD provides control of display formatting, such as MAP or PLAN views, selection of TCAS (optional) and Checklists (optional). Separate pilots/copilots course knobs and a single heading select knobs are located in the pedestal.

In the event of component failure, several reversionary modes exist to allow the remaining functioning component on one side to drive both displays. One vertical gyro, heading gyro or micro air data computer can be utilized to provide information to both pilot and copilots PFDs. Gyro reversion is selected by two small push buttons below each PFD while MADDC reversion is selected by a push button on the PFD display controller. The failure of a pilot's or copilot's PFD display unit can be handled by turning the dim control knob on the display controller fully counter-clockwise to 'OFF'. This will cause the PFD information to be displayed on the MFD. Flight director/autopilot function will remain intact. Reversion of both pilot and copilot PFD information to the MFD at the same time is prohibited since output of DGC2 will have precedence on the MFD. Output from a single DGC can be utilized to provide information to both single PFDs/MFD by selecting 'SG1' or 'SG2' on the MFD display controller. During SG reversion only the mode select on the functioning side will be operative. Therefore, flight director/autopilot operations must be conducted relative to that side only. All the above described reversionary modes are appropriately annunciated in both PFDs with amber messages.

The dual PFD systems include internal monitors to check for any significant differences between information being displayed to the pilot and copilot. The monitors will generate amber message annunciations to both PFDs for the following parameters: pitch attitude, roll attitude, heading, airspeed, altitude, radio altitude, localizer deviation and glideslope deviation.

HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)**NOTE**

- Slewing the baro setting during an autopilot coupled VNAV problem may adversely effect tracking of the vertical deviation pointer.
- Loss of DME on the non-coupled side during single point VNAV operation will result in incorrect vertical deviation display on that side.
- Both NAV 1 and NAV 2 should be set to the same VORTAC frequency during single point VNAV operation to assure agreement between the vertical deviation scales on pilot and copilot PFD's.
- Single-point VNAV will remain armed if another vertical mode is selected for early descent prior to path capture. After level-off, a descent away from the altitude preselector will occur upon intercept of the programmed VNAV path. To prevent an undesired descent after level-off, manually disarm the VNAV mode.

The FMS may also be used to program a VNAV problem. In this case the vertical deviation indicator will be labeled 'FMS'. The flight director/autopilot may or may not couple to an FMS VNAV problem, depending on the installed FMS (refer to the appropriate FMS supplement). For FMS installations in which VNAV is not couplable, the deviation indicator should be considered advisory information and another autopilot vertical mode (such as vertical speed) may be used to keep the deviation bar centered if desired. Top of climb and top of descent as well as level off points will be depicted on the MFD map when VNAV is to an FMS waypoint.

Any horizontal mode may be selected at any time; however, if a nav mode is selected outside the capture limits, the nav mode will arm and the heading mode will automatically be selected until the Nav captures.

The P-1000 digital autopilot conducts an internal self-test immediately after initial power up. No pilot conducted test is required. However, the pilot may conduct a operational test of the autopilot as follows:

1. Engage the autopilot with the elevators and ailerons in the neutral position.
2. Rotation of the pitch wheel must result in movement of the control column in the direction of pitch wheel movement.
3. Rotation of the turn knob must result in movement control knob in the direction of the turn knob movement. Engage the heading mode with heading cursor under the lubber line. Move the heading cursor to the left of the lubber line and the control wheel should roll left.
4. Engage the altitude hold mode; then set the pilot's altimeter to a lower altitude and the control wheel should move aft. Disengage the altitude hold mode. Pull aft on the control wheel. After a short delay, the elevator trim wheel must start trimming nose down.
5. Disengage the autopilot with the AP/TRIM DISC switch on the control wheel. The autopilot must disengage and the AP OFF light must illuminate for one second.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

The electronic flight instrument system consists of three electronic display units (DUs), two display guidance computers (DGCs), two micro air data computer (MADCs), three display controllers and one radar controller.

All three electronic display units are identical and interchangeable. A conventional slip/skid indicator is attached to the bezel for each PFD. The bezel to the MFD contains push buttons to select input for VNAV, takeoff and landing speed selection. All three electronic displays use a combination of manual and photo electric dimming for various light conditions.

The display guidance computers are the heart of the system and receive all the airplane sensor inputs. The sensor information is processed and transmitted to the electronic displays.

The display controllers for the PFDs provide the means by which the pilot can select navigation and bearing sources and control the display formatting, such as full or partial compass display. The display controller for the MFD provides control of display formatting, such as MAP or PLAN views, selection of TCAS (optional) and Checklists (optional). Separate pilots/copilots course knobs and a single heading select knobs are located in the pedestal.

In the event of component failure, several reversionary modes exist to allow the remaining functioning component on one side to drive both displays. One vertical gyro, heading gyro or micro air data computer can be utilized to provide information to both pilot and copilots PFDs. Heading, attitude and air data reversion is selected by three small push buttons below each PFD. The failure of a pilot's or copilot's PFD display unit can be handled by turning the dim control knob on the display controller fully counter-clockwise to 'OFF'. This will cause the PFD information to be displayed on the MFD. Flight director/autopilot function will remain intact. Reversion of both pilot and copilot PFD information to the MFD at the same time is prohibited since output of DGC2 will have precedence on the MFD. Output from a single DGC can be utilized to provide information to both single PFDs/MFD by selecting 'SG1' or 'SG2' on the MFD display controller. During SG reversion only the mode select on the functioning side will be operative. Therefore, flight director/autopilot operations must be conducted relative to that side only. All the above described reversionary modes are appropriately annunciated in both PFDs with amber messages.

The dual PFD systems include internal monitors to check for any significant differences between information being displayed to the pilot and copilot. The monitors will generate amber message annunciations to both PFDs for the following parameters: pitch attitude, roll attitude, heading, airspeed, altitude, radio altitude, localizer deviation and glideslope deviation.

HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)**NOTE**

- Slewing the baro setting during an autopilot coupled VNAV problem may adversely effect tracking of the vertical deviation pointer.
- Both NAV 1 and NAV 2 should be set to the same VORTAC frequency during single point VNAV operation to assure agreement between the vertical deviation scales on pilot and copilot PFD's.

The FMS may also be used to program a VNAV problem. In this case the vertical deviation indicator will be labeled 'FMS'. The flight director/autopilot may or may not couple to an FMS VNAV problem, depending on the installed FMS (refer to the appropriate FMS supplement). For FMS installations in which VNAV is not couplable, the deviation indicator should be considered advisory information and another autopilot vertical mode (such as vertical speed) may be used to keep the deviation bar centered if desired. Top of climb and top of descent as well as level off points will be depicted on the MFD map when VNAV is to an FMS waypoint.

Any horizontal mode may be selected at any time; however, if a nav mode is selected outside the capture limits, the nav mode will arm and the heading mode will automatically be selected until the Nav captures.

The P-1000 digital autopilot conducts an internal self-test immediately after initial power up. No pilot conducted test is required. However, the pilot may conduct a operational test of the autopilot as follows:

1. Engage the autopilot with the elevators and ailerons in the neutral position.
2. Rotation of the pitch wheel must result in movement of the control column in the direction of pitch wheel movement.
3. Rotation of the turn knob must result in movement control knob in the direction of the turn knob movement. Engage the heading mode with heading cursor under the lubber line. Move the heading cursor to the left of the lubber line and the control wheel should roll left.
4. Engage the altitude hold mode; then set the pilot's altimeter to a lower altitude and the control wheel should move aft. Disengage the altitude hold mode. Pull aft on the control wheel. After a short delay, the elevator trim wheel must start trimming nose down.
5. Disengage the autopilot with the AP/TRIM DISC switch on the control wheel. The autopilot must disengage and the AP OFF light must illuminate for one second.

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HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM (Continued)

The electronic flight instrument system consists of three electronic display units (DUs), two display guidance computers (DGCs), two micro air data computer (MADCs), three display controllers and one radar controller.

All three electronic display units are identical and interchangeable. A conventional slip/skid indicator is attached to the bezel for each PFD. The bezel to the MFD contains push buttons to select input for VNAV, takeoff and landing speed selection. All three electronic displays use a combination of manual and photo electric dimming for various light conditions.

The display guidance computers are the heart of the system and receive all the airplane sensor inputs. The sensor information is processed and transmitted to the electronic displays.

The display controllers for the PFDs provide the means by which the pilot can select navigation and bearing sources and control the display formatting, such as full or partial compass display. The display controller for the MFD provides control of display formatting, such as MAP or PLAN views, selection of TCAS (optional) and Checklists (optional). Separate pilots/copilots course knobs and a single heading select knobs are located in the pedestal.

In the event of component failure, several reversionary modes exist to allow the remaining functioning component on one side to drive both displays. One vertical gyro, heading gyro or micro air data computer can be utilized to provide information to both pilot and copilots PFDs. Heading, attitude and air data reversion is selected by three small push buttons below each PFD. The failure of a pilot's or copilot's PFD display unit can be handled by turning the dim control knob on the display controller fully counter-clockwise to 'OFF'. This will cause the PFD information to be displayed on the MFD. Flight director/autopilot function will remain intact. Reversion of both pilot and copilot PFD information to the MFD at the same time is prohibited since output of DGC2 will have precedence on the MFD. Output from a single DGC can be utilized to provide information to both single PFDs/MFD by selecting 'SG1' or 'SG2' on the MFD display controller. During SG reversion only the mode select on the functioning side will be operative. Therefore, flight director/autopilot operations must be conducted relative to that side only. All the above described reversionary modes are appropriately annunciated in both PFDs with amber messages.

The dual PFD systems include internal monitors to check for any significant differences between information being displayed to the pilot and copilot. The monitors will generate amber message annunciations to both PFDs for the following parameters: pitch attitude, roll attitude, heading, airspeed, altitude, radio altitude, localizer deviation and glideslope deviation.

VHF NAVIGATION SYSTEM

Momentary interference between the No. 1 Comm and the VHF navigation system may occur when the NAVs are tuned toward the high end of the frequency band (114.0 MHz) and the No. 1 Comm is tuned to frequencies from 118.0 MHz to 120.0 MHz. Should this occur, a Comm frequency above 120.0 MHz should be requested.

A NAV TEST button on the navigation control panel is designed to give the pilot a simple and accurate method of checking the VHF navigation receiver integrity.

NOTE

The NAV TEST should not be performed while the autopilot is coupled to the flight guidance system.

STANDBY FLIGHT DISPLAY

The Meggitt standby flight display provides airplane attitude, airspeed, mach, and altitude on a single display. The display is powered by a normal 28V DC source. A separate battery pack, when fully charged, allows for 30 minutes of operation, in the event of total loss of airplane electrical power.

Airplane attitude is provided by solid state inertial sensors. Airspeed and altitude are provided by a stand alone Air Data Unit.

SELF TEST

The unit has a built in test feature which automatically detects any failure of the display at power up and during continuous operation. If a failure is detected, the message flag will appear. Where it is not possible to display an appropriate message, the display backlight is switched off.

APPROACH FUNCTION

AIRPLANES EQUIPPED WITH COLLINS RADIOS

With the number one navigation radio tuned to an ILS frequency, pressing the APR button once will enable the LOC and GS course deviation bars to come into view. Pressing the APR button a second time will enable the BC course deviation bar to come into view. Pressing the APR button a third time will revert the display back to non-ILS format. LOC and GS flags will appear if the navigation signal is lost, navigation radio malfunction occurs, or the navigation radio is retuned to a VOR frequency.

NOTE

- VOR navigation is not available in the APR mode.
- LOC and GS course deviation bars present raw data and should not be mistaken for flight director command bars.

AIRPLANES EQUIPPED WITH PRIMUS II HONEYWELL RADIOS

Approach (APR) mode is not available on these airplanes.

FUEL SYSTEM

The fuel system consists of a single fuel tank feeding the right engine and a single tank feeding the left engine. No fuel management is required in normal operation of the airplane. If necessary to balance the fuel load asymmetric fueling, both engines may be operated from one tank or, for single-engine operation, the operating engine may be fed from either tank. When selecting crossfeed, allow sufficient time for the INTRANSIT light to illuminate, prior to reselecting OFF or the opposite tank. If the airplane is parked on a slope, care should be taken to assure fuel is not being lost through the fuel vents.

LOW FUEL WARNING SYSTEM

The low fuel level warning system causes an amber FUEL LOW LEVEL light to illuminate when fuel remaining in either fuel tank is 185 ±15 pounds (83 ±6 kilograms) or less. The system consists of an electromagnetic float switch in each fuel tank and left and right FUEL LOW LEVEL lights. These lights are tested by the annunciator panel test switch, and dimmed by the same control as the annunciator panel.

SECONDARY CABIN DOOR SEAL

The secondary cabin door seal provides backup sealing if the primary door seal should fail. There are no tests to check secondary door seal, so a thorough inspection is required. The secondary door seal should be inspected during preflight for rips and tears; it should not be folded under primary seal.

VHF NAVIGATION SYSTEM

Momentary interference between the No. 1 Comm and the VHF navigation system may occur when the NAVs are tuned toward the high end of the frequency band (114.0 MHz) and the No. 1 Comm is tuned to frequencies from 118.0 MHz to 120.0 MHz. Should this occur, a Comm frequency above 120.0 MHz should be requested.

A NAV TEST button on the navigation control panel is designed to give the pilot a simple and accurate method of checking the VHF navigation receiver integrity.

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FUEL SYSTEM

The fuel system consists of a single fuel tank feeding the right engine and a single tank feeding the left engine. No fuel management is required in normal operation of the airplane. If necessary to balance the fuel load asymmetric fueling, both engines may be operated from one tank or, for single-engine operation, the operating engine may be fed from either tank. When selecting crossfeed, allow sufficient time for the INTRANSIT light to illuminate, prior to reselecting OFF or the opposite tank. If the airplane is parked on a slope, care should be taken to assure fuel is not being lost through the fuel vents.

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The secondary cabin door seal provides backup sealing if the primary door seal should fail. There are no tests to check secondary door seal, so a thorough inspection is required. The secondary door seal should be inspected during preflight for rips and tears; it should not be folded under primary seal.

VHF NAVIGATION SYSTEM

Momentary interference between the No. 1 Comm and the VHF navigation system may occur when the NAVs are tuned toward the high end of the frequency band (114.0 MHz) and the No. 1 Comm is tuned to frequencies from 118.0 MHz to 120.0 MHz. Should this occur, a Comm frequency above 120.0 MHz should be requested.

A NAV TEST button on the navigation control panel is designed to give the pilot a simple and accurate method of checking the VHF navigation receiver integrity.

NOTE

The NAV TEST should not be performed while the autopilot is coupled to the flight guidance system.

FUEL SYSTEM

The fuel system consists of a single fuel tank feeding the right engine and a single tank feeding the left engine. No fuel management is required in normal operation of the airplane. If necessary to balance the fuel load asymmetric fueling, both engines may be operated from one tank or, for single-engine operation, the operating engine may be fed from either tank. When selecting crossfeed, allow sufficient time for the INTRANSIT light to illuminate, prior to reselecting OFF or the opposite tank. If the airplane is parked on a slope, care should be taken to assure fuel is not being lost through the fuel vents.

LOW FUEL WARNING SYSTEM

The low fuel level warning system causes an amber FUEL LOW LEVEL light to illuminate when fuel remaining in either fuel tank is 185 ±15 pounds (83 ±6 kilograms) or less. The system consists of an electromagnetic float switch in each fuel tank and left and right FUEL LOW LEVEL lights. These lights are tested by the annunciator panel test switch, and dimmed by the same control as the annunciator panel.

SECONDARY CABIN DOOR SEAL

The secondary cabin door seal provides backup sealing if the primary door seal should fail. There are no tests to check secondary door seal, so a thorough inspection is required. The secondary door seal should be inspected during preflight for rips and tears; it should not be folded under primary seal.

ENGINE

The Pratt & Whitney JT15D-5D engines produce 3045 pounds of takeoff thrust at sea level, flat rated to 80°F, 27°F. Thrust is managed by throttle lever input to a hydro-mechanical fuel control unit mounted on the fuel pump and driven by the accessory gearbox. Engine thrust must be managed by the pilot within the limits prescribed in this manual.

Ejector pumps in each wing reservoir supply fuel pressure to the engine driven fuel pump, which supplies fuel to the hydro-mechanical fuel control. Metered fuel is then supplied to two fuel nozzles rings in the engine combustor section.

Should fuel supply pressure to the engine driven pump fall below approximately 5 PSI, a pressure switch will illuminate the amber FUEL LOW PRESS LH or RH annunciator. If the fuel boost pump switch is in NORMAL, the fuel boost pump will be automatically switched on. The white FUEL BOOST ON annunciator will illuminate and the FUEL LOW PRESS annunciator can be reset by selecting the boost pump switch to OFF or ON and back to NORMAL if the low pressure condition has been corrected.

PRESSURIZATION/ENVIRONMENTAL SYSTEM

Normal system pressure is supplied by compressor bleed air from each engine at the rate of 6 pounds/minute passing through a series of control valves or precoolers and into the air cycle machine air conditioning and pressurization systems.

The control valves are combination flow control, shutoff and check valves. Valve position is controlled by a pressurization source selector switch providing OFF, GND, LH, NORM, RH and EMER positions. Normal inflight operation would be in the NORMAL mode. An electrical system malfunction will usually not affect normal pressurization. The control valves require electrical power to move from the normal mode position. If a different mode has been selected at the time electrical power to the valves is interrupted, the valves will return to the normal mode position. An overheat failure of the air cycle machine will result in automatic transfer from NORMAL mode to EMER mode. EMER mode should be used any time normal pressurization bleed air is not available. Its operation is indicated by an annunciator panel light. An increase in cabin noise level and temperature will also result since emergency bleed air comes directly from the left engine into the cabin.

The GND mode is provided to supply approximately three times the normal bleed flow (18 pounds/minute) from the right engine only, for improved heating and cooling capability during ground operations. Operation in the GND mode is indicated by an annunciator panel light. The pressurization system should be operated in NORM during routine operation because in that position air is bled from both engines equally, which results in a total airflow of approximately 12 pounds/minute. LH and RH positions are provided in case bleed air must be shut off from one engine. If an air cycle machine overpressure occurs while in GND mode, due to either a malfunction or to advancing the right throttle too far, the NORM PRESS circuit breaker must be disengaged and re-engaged before air cycle machine operation can be restored. An air cycle machine overpressure is indicated by illumination of the ACM O'PRESS light on the annunciator panel. Illumination of the ACM O'PRESS light refers to GND mode only and will not affect operation of the environmental system in NORM, LH, or RH if those selections are subsequently made, even though the ACM O'PRESS light will remain on if the NORM PRESS circuit breaker is not cycled.

(Continued Next Page)

PRESSURIZATION/ENVIRONMENTAL SYSTEM (Continued)

Normal bleed air supply to the cabin passes through the air cycle machine, which provides cooling or heating of the cabin as desired by the pilot. Normal control of cabin temperature is maintained by the AUTOMATIC TEMPERATURE CONTROL. The temperature range of this control is 18°C to 29°C. In the event that automatic control is lost, a manual control is provided. The manual control drives the bleed air mixing valves from one temperature extreme to the other, when actuated, in approximately 10 seconds.

The air cycle machine will automatically shut down and trip the emergency pressurization on if the air cycle machine overtemp. To preclude this happening, a temperature controller bias circuit will bias the air cycle machine to a warmer output temperature if the air cycle machine nears its overtemp limit. This bias circuit operates only in the automatic temperature cooling mode. Therefore, high altitude operations where air cycle machine cooling efficiency is low should be limited to AUTO mode operation. Additional heating of the cockpit area may be obtained by turning on the COCKPIT/DEFOG fan and opening the pilot's and copilot's foot warmer vents. These vents must be closed, however, for windshield defog.

The air cycle machine should be operated in the automatic mode above 31,000 feet. High altitude operation in MANUAL (cold mode) could result in air cycle machine overtemp and shutdown.

NOTE

Should the automatic temperature controller become inoperative and it is necessary to operate in manual mode above FL310, refer to Abnormal Procedures, "AUTOMATIC CABIN TEMPERATURE CONTROLLER INOPERATIVE."

Cabin pressure is maintained at any value selected by the pilot during flight up to a maximum value of 8.9 PSI. Rate of change of cabin altitude may also be controlled by the pilot.

A guarded emergency dump switch provides a rapid dump capability for the pilot. EMER DUMP position causes the pressurization outflow valves to open releasing cabin pressure and allowing cabin altitude to equalize with airplane altitude up to approximately 14,500 feet. PRESS SOURCE selector must be OFF to obtain complete depressurization at altitudes above 14,500 feet.

To obtain adequate cabin ventilation either on the ground or in flight with the pressurization source selector OFF, the overhead fan must be ON and the cabin should be depressurized using the emergency dump switch.

FREON AIR CONDITIONING (STANDARD)

A freon air conditioner discharges conditioned air from floor mounted evaporator/blowers in the forward and aft ends of the dropped isle, to provide rapid cabin cooling. The air conditioner is controlled by a switch panel on the copilot's instrument panel, and can be used on the ground or in flight up to 18,000 feet. The system may not be operated in the AC mode above 18,000 feet. A ground unit, or at least one generator, must be on line to run the compressor.

WINDSHIELD DEFOG

Windshield defog is accomplished by diverting conditioned cockpit air to the windshield and crew side windows. The overhead and defog fans must be turned to HI and the pilot's footwarmers CLOSED to obtain defogging. The defog fan should be turned on 15 minutes or more prior to descent from altitude to provide adequate clearing for descent into high humidity conditions. If the descent is begun prior to turning on the defog, the windshield anti-ice should be turned on to assure defogging.

If the outside of the windshield fogs over after landing, the windshield bleed air should be turned to LOW to clear the windshield.

ANTISKID SYSTEM

The antiskid system provides power assisted braking with skid protection. It is designed to provide maximum braking efficiency on all runway surfaces. The system consists of two wheel speed generators, power brake relay/antiskid valve, control box, oversize reservoir, accumulator and an electrically-driven hydraulic pump.

System operation is conventional with power braking available at all speeds while antiskid protection is available at speeds above approximately 12 knots. The antiskid protection feature is designed to operate with maximum pilot applied brake pressure. Do not modulate brake pressure when maximum braking is desired.

To ensure proper braking on water, snow and ice-covered, hard-surface runways and all unimproved surfaces, it is necessary for the pilot to apply maximum effort to the brake pedals throughout the braking run. When the system anticipates a skid and releases the applied brake pressure, any attempt by the pilot to modulate braking can result in an interruption of the applied brake signal and may increase stopping distance significantly.

Certain faults in the system are displayed on a "BITE" indicator (fault display unit), which is located under the removable panel at the aft of the left nose compartment. A white flag may appear in any of the five circular indicators located in a row on the fault display unit.

COPILOT'S ELECTRIC ELEVATOR TRIM

An electric elevator trim switch installed on the copilot's control wheel provides the copilot with electric elevator trim. The pilot's electric elevator trim switch, however, has priority and will operate the trim interrupting and overriding actuation of the copilot's switch. Both control wheels contain the trim disconnect function, full time, for the trim runaway condition.

OPERATIONS IN SEVERE ICING CONDITIONS

NOTE

The following weather conditions may be conducive to severe in-flight icing conditions:

- Visible rain at temperatures colder than 0°C ambient air temperature.
- Droplets that splash or splatter at temperatures colder than 0°C ambient air temperature.

PROCEDURES FOR EXITING THE SEVERE ICING ENVIRONMENT

These procedures are applicable to all flight phases from takeoff to landing:

1. Monitor the ambient air temperature.
2. While severe icing may form at temperatures as cold as -18°C, increased vigilance is warranted at temperatures around freezing with visible moisture present. Severe icing conditions are indicated by one or more of the following visual cues:
 - Unusually extensive ice accumulations on the airframe and windshield in areas not normally observed to collect ice.
 - Accumulation of ice on the upper surface of the wing aft of the protected area.
3. If the visual cues listed above are observed, accomplish the following:
 - Immediately request priority handling from Air Traffic Control to facilitate exiting the severe icing conditions in order to avoid extended exposure to flight conditions more severe than those for which the airplane has been certified.
 - Avoid abrupt and excessive maneuvering that may exacerbate control difficulties.
 - Do not engage autopilot.
 - If autopilot is engaged, hold control wheel firmly and disengage autopilot.
 - If unusual or uncommanded roll control movement is observed, reduce angle-of-attack.
 - Do not extend flaps when holding in icing conditions. Operation with the flaps extended can result in a reduced wing angle-of-attack, with the possibility of ice forming on the upper surface of the wing further aft on the wing than normal, possibly aft of the protected area.
 - If the flaps are extended, do not retract them until the airframe is clear of ice.
 - Report these weather conditions to Air Traffic Control.

PERFORMANCE
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GENERAL
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PERFORMANCE - GENERAL

REGULATORY COMPLIANCE

Information in this section is presented for the purpose of compliance with the appropriate performance criteria and certification requirements of FAR 25.

STANDARD PERFORMANCE CONDITIONS

All performance in this manual is based on flight test data and the following conditions:

1. Thrust ratings include the installation, bleed air and accessory losses.
2. Full temperature accountability within the operational limits for which the airplane is certified.

NOTE

Should ambient air temperature or altitude be below the lowest temperature or altitude shown on the performance charts, use the performance at the lowest value shown.

3. Wing flap positions as follows:

	Flap Handle Position	Flap Deflection
a. Takeoff	TO	7°
b. Takeoff	TO/APPR	15°
c. Enroute	UP	0°
d. Approach	TO/APPR	15°
e. Landing	LAND	35°

4. All takeoff and landing performance is based on a paved, dry runway.
5. The takeoff performance was obtained using the following procedures and conditions:

SINGLE ENGINE TAKEOFF - ACCELERATE GO

- a. The power was set static to the setting corresponding to Figure 4-9, and then the brakes were released.
- b. The pilot recognized engine failure at V_1 .
- c. The airplane continued to accelerate to V_R at which time positive rotation to +12 degrees nose up pitch attitude was made. After reaching 35 feet AGL, pitch attitude was adjusted to +10 degrees nose up (flight director go-around command).

NOTE

After rotation, a slight pull may be required to achieve V_2 .

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SINGLE ENGINE TAKEOFF - ACCELERATE GO (Continued)

- d. The landing gear was retracted when a positive climb rate was established at or above 35 feet AGL.
- e. V_2 was maintained from the 35-foot point above the runway to 400 feet AGL.
- f. The airplane was then accelerated to $V_2 + 10$ KIAS at which time the flaps were retracted and the acceleration continued to V_{ENR} . The climb was then continued to 1500 feet AGL.

SINGLE ENGINE TAKEOFF - ACCELERATE STOP

- a. The power was set static to the setting corresponding to Figure 4-9, and then the brakes were released.
- b. The pilot recognized the necessity to stop because of engine failure or other reasons just prior to V_1 .
- c. Maximum pilot braking effort was started at V_1 and continued until the airplane came to a stop.
- d. Both throttles were brought to idle immediately after brake application.
- e. Directional control was maintained through the rudder pedals and differential braking as required.
- f. Antiskid was ON during all tests.
- g. Speedbrakes were not used.

MULTI-ENGINE TAKEOFF

- a. The power was set static to the setting corresponding to Figure 4-9, and then the brakes were released.
 - b. Positive rotation to +12 degrees was made at V_R to achieve to $V_2 + 10$ by 35 feet AGL.
 - c. The landing gear was retracted when a positive climb rate was established above 35 feet. After reaching 35 feet, adjust pitch attitude and retract flaps as desired.
6. The landing performance was obtained using the following procedures and conditions:

LANDING

- a. Landing preceded by a steady three degree angle approach down to the 50-foot height point with airspeed at V_{REF} in the landing configuration.
- b. Two engine thrust setting during approach was selected to maintain the three degree approach angle at V_{REF} .
- c. Idle thrust was established at the 50-foot height point and throttles remained in that setting until the airplane had stopped.
- d. Rotation to a landing attitude was accomplished at a normal rate.
- e. Maximum wheel braking was initiated immediately on nose wheel contact and continued throughout the landing roll.
- f. The antiskid system was ON during all tests.
- g. Speedbrakes were not used.

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LANDING (Continued)Conditions

Wing Flaps	Land
Engines	Two engines operating
Landing gear	Extended
Antiskid system	Operative

VARIABLE FACTORS AFFECTING PERFORMANCE

Details of variables affecting performance are given with tables to which they apply. Assumptions which relate to all performance calculations, unless otherwise stated, are:

- Cabin pressurization.
- Anti-ice off.
- Humidity corrections on thrust have been applied according to the applicable regulations.
- Winds, for which correction information is presented on the charts, are to be taken as the tower winds 32.8 feet (10 meters) above runway surface. Factors have been applied as prescribed in the applicable regulations. In the tables, negative represents tailwind and positive represents headwind.
- Gradient correction factors can be applied to gradients less than or equal to 2 percent downhill or 2 percent uphill. In the tables, negative represents downhill gradients and positive represents uphill gradients.

DEFINITIONS

Accelerate-Stop Distance: The distance required to accelerate to V_1 , and abort the takeoff and come to a complete stop with maximum braking applied at V_1 .

Altitude: All altitudes used in this manual are pressure altitudes unless otherwise stated.

Anti-Ice Systems: The following systems comprise the anti-ice systems which affect performance in this section:

- Windshield Bleed Air Anti-Ice.
- Engine Anti-Ice.
- Wing Anti-Ice.

Performance, when referred to ANTI-ICE ON, is based on all the above systems being operated at the same time.

Additionally, the pitot-static and angle-of-attack anti-ice systems are anti-ice systems which do not affect performance.

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DEFINITIONS (Continued)

Calibrated Airspeed (KCAS):	Indicated airspeed (knots) corrected for position error and assumes zero instrument error.
CAT II:	Category II operation. A straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure.
Climb Gradient:	The ratio of the change in height during a portion of a climb, to the horizontal distance transversed in the same time interval.
Deice Systems:	The horizontal stabilizer and wing deice systems are the only deice systems.
Demonstrated Crosswind:	The demonstrated crosswind velocity of 20 knots (measured at 30 feet above the runway surface) is the velocity of the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests. This is not limiting. The demonstrated velocity for an airplane using thrust reversers is 20 knots.
Engine Out Accelerate-Go Distance:	The horizontal distance from brake release to the point at which the airplane attains a height of 35 feet above the runway surface, on a takeoff during which an engine is recognized to have failed at V_1 and the takeoff is continued.
Gross Climb Gradient:	The climb gradient that the airplane can actually achieve with ideal ambient conditions (smooth air).
Indicated Airspeed (KIAS):	Airspeed indicator readings (knots). Zero instrument error is assumed.
ISA:	International Standard Atmosphere.
Landing Distance:	The distance from a point 50 feet above the runway surface to the point at which the airplane would come to a full stop on the runway.
Mach Number:	The ratio of true airspeed to the speed of sound.
Net Climb Gradient:	The gross climb gradient reduced by 0.8% during the takeoff phase and 1.1% during enroute. This conservatism is required by special condition for terrain clearance determination to account for variables encountered in service.

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DEFINITIONS (Continued)

OAT or TEMP:	Outside Air Temperature or Ambient Air Temperature. The free air static temperature, obtained either from ground meteorological sources or from inflight temperature indications adjusted for instrument error and compressibility effects.
Position Correction:	A correction applied to indicated airspeed or altitude to eliminate the effect of the location of the static pressure source on the instrument reading. No position corrections are required when using performance section charts in Section IV since all airspeeds and altitudes in this section are presented as "indicated" values except for stall speeds which are presented as "calibrated" values.
RAT:	Ram Air Temperature. The indicated outside air temperature as read from the RAT display. This must be corrected for ram air temperature rise to obtain true outside air temperature.
Reference Zero:	The point in the takeoff flight path at which the airplane is 35 feet above the takeoff surface and at the end of the takeoff distance required.
Residual Ice:	That ice which is not completely removed from the leading edge stagnation areas of the wing and horizontal stabilizer by the surface anti-ice/deice system during operation in icing conditions. Refer to Section III and IV for applicable procedures.
Takeoff Field Length:	<p>The Takeoff Field Length given for each combination of gross weight, ambient temperature, altitude, wind and runway gradients is the greatest of the following:</p> <ul style="list-style-type: none">a. 115 percent of the two-engine horizontal takeoff distance from start to a height of 35 feet above runway surface.b. Accelerate-stop distance.c. The engine-out accelerate-go distance. <p>No specific identification is made on the charts as to which of these distances governs a specific case.</p>
True Airspeed (KTAS):	The airspeed (knots) of an airplane relative to undisturbed air.
V ₁ :	Takeoff Decision Speed. The distance to continue the takeoff to 35 feet will not exceed the scheduled takeoff field length if recognition occurred at V ₁ (accelerate-go). The distance to bring the airplane to a full stop (accelerate-stop) will not exceed the scheduled takeoff field length provided that the brakes are applied at V ₁ .
V ₂ :	Takeoff Safety Speed. This climb speed is the actual speed at 35 feet above the runway surface as demonstrated in flight during takeoff with one engine inoperative.

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DEFINITIONS (Continued)

V_{35} :	This climb speed is the actual speed at 35 feet above the runway surface as demonstrated in flight during takeoff with both engines operating.
V_A :	The maneuvering speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.
V_{APP} :	The landing approach climb airspeed ($1.3 V_{S1}$) with 15° degrees flap position, landing gear UP.
V_{ENR} :	Single-engine enroute climb speed.
V_{FE} :	Maximum flap extended speed. The highest speed permissible with wing flaps in a prescribed extended position.
V_{LE} :	Maximum landing gear extended speed. The maximum speed at which an airplane can be safely flown with the landing gear extended.
V_{LO} (Extension):	Maximum landing gear extension speed. The maximum speed at which the landing gear can be safely extended.
V_{LO} (Retraction):	Maximum landing gear retracting speed. The maximum speed at which the landing gear can be safely retracted.
V_{MCA} :	Minimum airspeed in the air at which directional control can be maintained, when one engine is suddenly made inoperative. V_{MCA} is a function of engine thrust which varies with altitude and temperature. The V_{MCA} presented was determined for maximum takeoff thrust. $V_{MCA} = 95$ KIAS.
V_{MCG} :	Minimum airspeed on the ground at which directional control can be maintained, when one engine is suddenly made inoperative, using only aerodynamic controls. V_{MCG} is a function of engine thrust which varies with altitude and temperature. The V_{MCG} presented was determined for maximum takeoff thrust. $V_{MCG} = 91$ KIAS.
V_{MO}/M_{MO} :	Maximum operating limit speed.
V_R :	The rotation speed is the speed at which rotation is initiated during takeoff to attain the V_2 climb speed at or before a height of 35 feet above runway surface has been reached.

(Continued Next Page)

DEFINITIONS (Continued)

V_{REF} :	The airspeed equal to the landing 50-foot point speed ($1.3 V_{SO}$) with full flaps and landing gear extended.
V_{SB} :	Maximum operating speed with speed brakes in the extended position.
V_{SO} :	The stalling speed or the minimum steady flight speed in the landing configuration.
V_{S1} :	The stalling speed or the minimum steady flight speed obtained in a specified configuration.
Visible Moisture:	Visible moisture includes, but is not limited to, the following conditions: fog with visibility less than one mile, wet snow and rain.
Wind:	The wind velocities recorded as variables on the charts of this section are to be understood as the headwind or tailwind components of the actual winds at 32.8 feet (10 meters) above the runway surface (tower winds).

CONFIGURATIONS

	NUMBER OF OPERATING ENGINES	THRUST	FLAP SETTING (DEGREE)	GEAR
1st SEGMENT TAKEOFF CLIMB	1	TAKEOFF	7° or 15°	DOWN
2nd SEGMENT TAKEOFF CLIMB	1	TAKEOFF	7° or 15°	UP
3rd SEGMENT HORIZONTAL ACCELERATION	1	TAKEOFF (5 MINUTES MAXIMUM) THEN MAXIMUM CONTINUOUS	7° or 15° TRANSITIONING TO UP	UP
FINAL SEGMENT CLIMB	1	MAXIMUM CONTINUOUS	UP	UP
ENROUTE CLIMB	1	MAXIMUM CONTINUOUS	UP	UP
APPROACH CLIMB	1	TAKEOFF	15°	UP
LANDING CLIMB	2	TAKEOFF	35°	DOWN

Figure 4-1

NOISE CHARACTERISTICS

CERTIFICATED NOISE LEVELS

The following noise levels were established using test data obtained and analyzed under procedures of FAR Part 36, Amendment 20. This aircraft complies with FAR Part 36, Stage 3 requirements.

NOISE REFERENCE	EPNdB
TAKEOFF	82.9
SIDELINE	95.9
APPROACH	85.7

Takeoff and sideline noise levels were obtained at a takeoff weight of 16,300 pounds with 7 degrees flaps and climb speed of 126 KIAS. For takeoff, thrust was cut back from takeoff to 80.2% N_1 at 3063 feet AGL. Approach data was obtained at 15,200 pounds, landing gear down, flaps 35° and 118 KIAS.

No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of, any airport.

SUPPLEMENTAL ICAO ANNEX 16, CHAPTER 3 NOISE LEVEL INFORMATION

The ICAO Annex 16, Chapter 3, noise values are the same as those for FAR Part 36, Amendment 20, and were obtained with the procedures used to establish compliance with FAR Part 36, Amendment 20. The ICAO Annex 16, Chapter 3, noise levels were obtained by analysis of approved data used to demonstrate compliance with FAR Part 36, Amendment 20, Noise Standards. This data is applicable only after approval of the Civil Aviation Approving Authority of the country of airplane registration, including approval of the equivalent procedures used to establish compliance with FAR Part 36, Amendment 20.

SUPPLEMENTAL A-WEIGHTED NOISE LEVELS

The following A-weighted noise levels were established for FAR Part 36 reference conditions used in CERTIFICATED NOISE LEVELS.

NOISE REFERENCE	dBA
TAKEOFF	67.1
APPROACH	78.0

Takeoff noise levels were obtained at a takeoff weight of 16,300 pounds with 7 degrees flaps and climb speed of 126 KIAS. For takeoff, thrust was cut back from takeoff to 80.2% N_1 at 3063 feet AGL. Approach data was obtained at 15,200 pounds, landing gear down, flaps 35° and 118 KIAS.

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TEMPERATURE CONVERSION CELSIUS TO FAHRENHEIT

DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F
-100	-148	-74	-101	-48	-54	-22	-8	4	39	30	86
-99	-146	-73	-99	-47	-53	-21	-6	5	41	31	88
-98	-144	-72	-98	-46	-51	-20	-4	6	43	32	90
-97	-143	-71	-96	-45	-49	-19	-2	7	45	33	91
-96	-141	-70	-94	-44	-47	-18	0	8	46	34	93
-95	-139	-69	-92	-43	-45	-17	1	9	48	35	95
-94	-137	-68	-90	-42	-44	-16	3	10	50	36	97
-93	-135	-67	-89	-41	-42	-15	5	11	52	37	99
-92	-134	-66	-87	-40	-40	-14	7	12	54	38	100
-91	-132	-65	-85	-39	-38	-13	9	13	55	39	102
-90	-130	-64	-83	-38	-36	-12	10	14	57	40	104
-89	-128	-63	-81	-37	-35	-11	12	15	59	41	106
-88	-126	-62	-80	-36	-33	-10	14	16	61	42	108
-87	-125	-61	-78	-35	-31	-9	16	17	63	43	109
-86	-123	-60	-76	-34	-29	-8	18	18	64	44	111
-85	-121	-59	-74	-33	-27	-7	19	19	66	45	113
-84	-119	-58	-72	-32	-26	-6	21	20	68	46	115
-83	-117	-57	-71	-31	-24	-5	23	21	70	47	117
-82	-116	-56	-69	-30	-22	-4	25	22	72	48	118
-81	-114	-55	-67	-29	-20	-3	27	23	73	49	120
-80	-112	-54	-65	-28	-18	-2	28	24	75	50	122
-79	-110	-53	-63	-27	-17	-1	30	25	77	51	124
-78	-108	-52	-62	-26	-15	0	32	26	79	52	126
-77	-107	-51	-60	-25	-13	1	34	27	81	53	127
-76	-105	-50	-58	-24	-11	2	36	28	82	54	129
-75	-103	-49	-56	-23	-9	3	37	29	84	55	131

PRESSURE CONVERSION INCHES OF MERCURY TO MILLIBARS

INCHES OF MERCURY MILLIBARS	28.0 948	28.1 951	28.2 955	28.3 958	28.4 962	28.5 965	28.6 968	28.7 972	28.8 975	28.9 979	29.0 982
INCHES OF MERCURY MILLIBARS	29.1 985	29.2 989	29.3 992	29.4 995	29.5 999	29.6 1002	29.7 1006	29.8 1009	29.9 1012	30.0 1016	
INCHES OF MERCURY MILLIBARS	30.1 1019	30.2 1023	30.3 1026	30.4 1029	30.5 1033	30.6 1036	30.7 1040	30.8 1043	30.9 1046	31.0 1050	

Figure 4-2 (Sheet 1 of 3)

**FUEL QUANTITY CONVERSION
U.S. GALLONS TO LITERS**

U.S. GALLONS	LITERS	U.S. GALLONS	LITERS	U.S. GALLONS	LITERS	U.S. GALLONS	LITERS
10	37.9	310	1173.4	610	2308.9	910	3444.7
20	75.7	320	1211.2	620	2346.7	920	3482.6
30	113.6	330	1249.1	630	2384.6	930	3520.4
40	151.4	340	1286.9	640	2422.4	940	3558.3
50	189.3	350	1324.8	650	2460.3	950	3596.1
60	227.1	360	1362.6	660	2498.1	960	3634.0
70	265.0	370	1400.5	670	2536.0	970	3671.8
80	302.8	380	1438.3	680	2573.8	980	3709.7
90	340.7	390	1476.2	690	2611.7	990	3747.5
100	378.5	400	1514.0	700	2649.5	1000	3785.4
110	416.4	410	1551.9	710	2687.4	1010	3823.3
120	454.2	420	1589.7	720	2725.2	1020	3861.1
130	492.1	430	1627.6	730	2763.1	1030	3899.0
140	529.9	440	1665.4	740	2800.9	1040	3936.8
150	567.8	450	1703.3	750	2838.8	1050	3974.7
160	605.6	460	1741.1	760	2876.6	1060	4012.5
170	643.5	470	1779.0	770	2914.5	1070	4050.4
180	681.3	480	1816.8	780	2952.3	1080	4088.2
190	719.2	490	1854.7	790	2990.2	1090	4126.1
200	757.0	500	1892.5	800	3028.0	1100	4163.9
210	794.9	510	1930.4	810	3065.9	1110	4201.8
220	832.7	520	1968.2	820	3103.7	1120	4239.6
230	870.6	530	2006.1	830	3141.6	1130	4277.5
240	908.4	540	2043.9	840	3179.4	1140	4315.4
250	946.3	550	2081.8	850	3217.3	1150	4353.2
260	984.1	560	2119.6	860	3255.1	1160	4391.1
270	1022.0	570	2157.5	870	3293.0	1170	4428.9
280	1059.8	580	2195.3	880	3330.8	1180	4466.8
290	1097.7	590	2233.2	890	3368.7	1190	4504.6
300	1135.5	600	2271.0	900	3406.5	1200	4542.5

**WEIGHT CONVERSION
POUNDS TO KILOGRAMS**

POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS
18200	8255	13400	6078	8600	3900
18000	8164	13200	5988	8400	3810
17800	8074	13000	5897	8200	3719
17600	7983	12800	5806	8000	3628
17400	7892	12600	5715	7800	3538
17200	7801	12400	5625	7600	3447
17000	7711	12200	5534	7400	3356
16800	7620	12000	5443	7200	3265
16600	7529	11800	5352	7000	3175
16400	7439	11600	5262	6800	3084
16200	7348	11400	5171	6600	2993
16000	7257	11200	5080	6400	2903
15800	7166	11000	4990	6200	2812
15600	7076	10800	4899	6000	2721
15400	6985	10600	4808	5800	2630
15200	6894	10400	4717	5600	2540
15000	6804	10200	4627	5400	2449
14800	6713	10000	4536	5200	2358
14600	6622	9800	4445	5000	2268
14400	6532	9600	4354	4800	2177
14200	6441	9400	4263	4600	2086
14000	6350	9200	4173	4400	1995
13800	6260	9000	4082	4200	1905
13600	6169	8800	3991	4000	1814

Figure 4-2 (Sheet 2 of 3)

HORIZONTAL LENGTH CONVERSION FEET TO METERS

FEET	METERS	FEET	METERS
15000	4572	7400	2256
14800	4511	7200	2195
14600	4450	7000	2134
14400	4389	6800	2073
14200	4328	6600	2012
14000	4267	6400	1951
13800	4206	6200	1890
13600	4145	6000	1829
13400	4084	5800	1768
13200	4023	5600	1707
13000	3962	5400	1646
12800	3901	5200	1585
12600	3840	5000	1524
12400	3780	4800	1463
12200	3719	4600	1402
12000	3658	4400	1341
11800	3597	4200	1280
11600	3536	4000	1219
11400	3475	3800	1158
11200	3414	3600	1097
11000	3353	3400	1036
10800	3292	3200	975
10600	3231	3000	914
10400	3170	2800	853
10200	3109	2600	792
10000	3048	2400	732
9800	2987	2200	671
9600	2926	2000	610
9400	2865	1800	549
9200	2804	1600	488
9000	2743	1400	427
8800	2682	1200	366
8600	2621	1000	305
8400	2560	800	244
8200	2499	600	183
8000	2438	400	122
7800	2377	200	61
7600	2316	0	0

Figure 4-2 (Sheet 3 of 3)

RAM AIR TEMPERATURE RISE - DEGREES CELSIUS

ASSUME INDICATED TEMPERATURE = -30 DEGREES C
 A. AIRSPEED = 200 KIAS
 B. PRESSURE ALTITUDE= 25,000 FEET
 C. RAM AIR TEMPERATURE RISE = 11 DEGREES C
 AMBIENT TEMPERATURE = (-30) - (11) = -41 DEGREES C

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	7	8	8	9	10	10	11
1000	1	2	2	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	10	11	11
2000	1	2	2	2	3	3	3	4	4	5	5	6	6	7	7	8	9	9	10	11	12
3000	1	2	2	2	3	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11	12
4000	1	2	2	2	3	3	4	4	4	5	6	6	7	7	8	9	9	10	11	11	12
5000	1	2	2	2	3	3	4	4	5	5	6	6	7	7	8	9	10	10	11	12	13
6000	1	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	11	11	12	13
7000	1	2	2	3	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	12	13
8000	2	2	2	3	3	4	4	5	5	6	6	7	7	8	9	10	10	11	12	13	14
9000	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	11	12	12	13	14
10000	2	2	2	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	13	14	15
11000	2	2	2	3	3	4	4	5	6	6	7	7	8	9	10	10	11	12	13	14	15
12000	2	2	3	3	3	4	5	5	6	6	7	8	8	9	10	11	12	13	13	14	15
13000	2	2	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	13	14	15	16
14000	2	2	3	3	4	4	5	5	6	7	7	8	9	10	11	11	12	13	14	15	16
15000	2	2	3	3	4	4	5	6	6	7	8	8	9	10	11	12	13	14	15	16	17
16000	2	2	3	3	4	4	5	6	6	7	8	9	10	10	11	12	13	14	15	16	17
17000	2	2	3	3	4	5	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18
18000	2	3	3	4	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	17	18
19000	2	3	3	4	4	5	6	6	7	8	9	10	10	11	12	13	14	16	17	18	19
20000	2	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	20
21000	2	3	3	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	18	19	20
22000	2	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21
23000	2	3	4	4	5	6	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21
24000	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	16	17	18	19	21	22
25000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	23
26000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	17	18	19	21	22	23
27000	3	3	4	5	6	6	7	8	9	10	11	12	14	15	16	17	19	20	21	23	24
28000	3	4	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	21	22	23	25
29000	3	4	4	5	6	7	8	9	10	11	12	13	14	16	17	18	20	21	23	24	26
30000	3	4	5	5	6	7	8	9	10	11	13	14	15	16	18	19	20	22	23	25	27
31000	3	4	5	6	7	7	8	9	11	12	13	14	15	17	18	20	21	23	24	26	27
32000	3	4	5	6	7	8	9	10	11	12	13	15	16	17	19	20	22	23	25	27	28
33000	4	4	5	6	7	8	9	10	11	13	14	15	17	18	19	21	22	24	26	27	29
34000	4	4	5	6	7	8	9	11	12	13	14	16	17	19	20	22	23	25	27	28	30
35000	4	5	6	6	8	9	10	11	12	13	15	16	18	19	21	22	24	26	27	29	31
36000	4	5	6	7	8	9	10	11	13	14	15	17	18	20	21	23	25	27	28	30	32
37000	4	5	6	7	8	9	11	12	13	15	16	18	19	21	22	24	26	28	29	31	33
38000	4	5	6	7	9	10	11	12	14	15	17	18	20	22	23	25	27	29	31	33	35
39000	5	6	7	8	9	10	12	13	14	16	18	19	21	23	24	26	28	30	32	34	36
40000	5	6	7	8	9	11	12	14	15	17	18	20	22	24	25	27	29	31	33	35	37
41000	5	6	7	8	10	11	13	14	16	17	19	21	23	25	26	28	30	33	35	37	39
42000	5	6	8	9	10	12	13	15	16	18	20	22	24	26	28	30	32	34	36	38	41
43000	5	7	8	9	11	12	14	15	17	19	21	23	25	27	29	31	33	35	37	40	42
44000	6	7	8	10	11	13	14	16	18	20	22	24	26	28	30	32	34	37	39	41	44
45000	6	7	9	10	12	13	15	17	19	21	23	25	27	29	31	33	36	38	41	43	46

Figure 4-3

AIRSPEED AND MACHMETER CALIBRATION PILOT'S AND COPILOT'S SYSTEMS

AIRSPEED CALIBRATION*

IN FLIGHT			
GEAR UP 0°, 7° and 15 ° FLAP POSITION		GEAR DOWN 7°, 15° and 35 ° FLAP POSITION	
KIAS	KCAS	KIAS	KCAS
80	78	80	78
85	83	85	83
90	88	90	89
95	93	95	94
100	99	100	99
105	104	105	104
110	109	110	109
115	114	115	115
120	119	120	120
125	124	125	125
130	129	130	130
135	134	135	135
140	139	140	140
145	144	145	145
150	149	150	150
155	154	155	155
160	159	160	160
165	164	165	165
170	169	170	170
175	174	175	175
180	179	180	180
185	184		
190	189		
195	194		
200	199		
205	204		
210	209		
215	214		
220	219		
225	224		
230	229		
235	234		
240	239		
245	244		
250	248		
255	254		
260	258		
265	264		
270	268		
275	274		
280	278		
285	284		
290	288		
295	294		
300	298		

GROUND AIRSPEED CALIBRATION

FLAPS 7° AND 15°	
GEAR DOWN	
KIAS	KCAS
50	57
55	61
60	66
65	70
70	75
75	79
80	84
85	88
90	93
95	98
100	102
105	107
110	112
115	116
120	120
125	125
130	130

MACHMETER CALIBRATION*

ALL ALTITUDES GEAR UP FLAPS UP	
INDICATED MACH. NO.	CALIBRATED MACH. NO.
0.400	0.372
0.410	0.407
0.420	0.417
0.430	0.427
0.440	0.438
0.450	0.448
0.460	0.458
0.470	0.468
0.480	0.478
0.490	0.488
0.500	0.498
0.510	0.508
0.520	0.518
0.530	0.527
0.540	0.537
0.550	0.547
0.560	0.557
0.570	0.567
0.580	0.577
0.590	0.587
0.600	0.597
0.610	0.607
0.620	0.617
0.630	0.626
0.640	0.636
0.650	0.646
0.660	0.656
0.670	0.666
0.680	0.676
0.690	0.685
0.700	0.695
0.710	0.705
0.720	0.715
0.730	0.724
0.740	0.734
0.750	0.744
0.760	0.754

*(Also applicable for Standby System)

Figure 4-4

RAM AIR TEMPERATURE RISE - DEGREES CELSIUS

ASSUME INDICATED TEMPERATURE = -30 DEGREES C
 A. AIRSPEED = 200 KIAS
 B. PRESSURE ALTITUDE= 25,000 FEET
 C. RAM AIR TEMPERATURE RISE = 11 DEGREES C
 AMBIENT TEMPERATURE = (-30) - (11) = -41 DEGREES C

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	1	1	2	2	2	3	3	4	4	4	5	5	6	6	7	8	8	9	10	10	11
1000	1	2	2	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	10	11	11
2000	1	2	2	2	3	3	3	4	4	5	5	6	6	7	7	8	9	9	10	11	12
3000	1	2	2	2	3	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11	12
4000	1	2	2	2	3	3	4	4	4	5	6	6	7	7	8	9	9	10	11	11	12
5000	1	2	2	2	3	3	4	4	5	5	6	6	7	7	8	9	10	10	11	12	13
6000	1	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	11	11	12	13
7000	1	2	2	3	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	12	13
8000	2	2	2	3	3	4	4	5	5	6	6	7	7	8	9	10	10	11	12	13	14
9000	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	11	12	12	13	14
10000	2	2	2	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	13	14	15
11000	2	2	2	3	3	4	4	5	6	6	7	7	8	9	10	10	11	12	13	14	15
12000	2	2	3	3	3	4	5	5	6	6	7	8	8	9	10	11	12	13	13	14	15
13000	2	2	3	3	4	4	5	5	6	7	7	8	9	9	10	11	12	13	14	15	16
14000	2	2	3	3	4	4	5	5	6	7	7	8	9	10	11	11	12	13	14	15	16
15000	2	2	3	3	4	4	5	6	6	7	8	8	9	10	11	12	13	14	15	16	17
16000	2	2	3	3	4	4	5	6	6	7	8	9	10	10	11	12	13	14	15	16	17
17000	2	2	3	3	4	5	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18
18000	2	3	3	4	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	17	18
19000	2	3	3	4	4	5	6	6	7	8	9	10	10	11	12	13	14	16	17	18	19
20000	2	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	15	16	17	18	20
21000	2	3	3	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	18	19	20
22000	2	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	21
23000	2	3	4	4	5	6	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21
24000	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	16	17	18	19	21	22
25000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	19	20	21	23
26000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	17	18	19	21	22	23
27000	3	3	4	5	6	6	7	8	9	10	11	12	14	15	16	17	19	20	21	23	24
28000	3	4	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	21	22	23	25
29000	3	4	4	5	6	7	8	9	10	11	12	13	14	16	17	18	20	21	23	24	26
30000	3	4	5	5	6	7	8	9	10	11	13	14	15	16	18	19	20	22	23	25	27
31000	3	4	5	6	7	7	8	9	11	12	13	14	15	17	18	20	21	23	24	26	27
32000	3	4	5	6	7	8	9	10	11	12	13	15	16	17	19	20	22	23	25	27	28
33000	4	4	5	6	7	8	9	10	11	13	14	15	17	18	19	21	22	24	26	27	29
34000	4	4	5	6	7	8	9	11	12	13	14	16	17	19	20	22	23	25	27	28	30
35000	4	5	6	6	8	9	10	11	12	13	15	16	18	19	21	22	24	26	27	29	31
36000	4	5	6	7	8	9	10	11	13	14	15	17	18	20	21	23	25	27	28	30	32
37000	4	5	6	7	8	9	11	12	13	15	16	18	19	21	22	24	26	28	29	31	33
38000	4	5	6	7	9	10	11	12	14	15	17	18	20	22	23	25	27	29	31	33	35
39000	5	6	7	8	9	10	12	13	14	16	18	19	21	23	24	26	28	30	32	34	36
40000	5	6	7	8	9	11	12	14	15	17	18	20	22	24	25	27	29	31	33	35	37
41000	5	6	7	8	10	11	13	14	16	17	19	21	23	25	26	28	30	33	35	37	39
42000	5	6	8	9	10	12	13	15	16	18	20	22	24	26	28	30	32	34	36	38	41
43000	5	7	8	9	11	12	14	15	17	19	21	23	25	27	29	31	33	35	37	40	42
44000	6	7	8	10	11	13	14	16	18	20	22	24	26	28	30	32	34	37	39	41	44
45000	6	7	9	10	12	13	15	17	19	21	23	25	27	29	31	33	36	38	41	43	46

Figure 4-3

AIRSPEED AND MACHMETER CALIBRATION PILOT'S AND COPILOT'S SYSTEMS

AIRSPEED CALIBRATION*

IN FLIGHT			
GEAR UP 0°, 7° and 15 ° FLAP POSITION		GEAR DOWN 7°, 15° and 35 ° FLAP POSITION	
CIAS	KCAS	CIAS	KCAS
80	78	80	78
85	83	85	83
90	88	90	89
95	93	95	94
100	99	100	99
105	104	105	104
110	109	110	109
115	114	115	115
120	119	120	120
125	124	125	125
130	129	130	130
135	134	135	135
140	139	140	140
145	144	145	145
150	149	150	150
155	154	155	155
160	159	160	160
165	164	165	165
170	169	170	170
175	174	175	175
180	179	180	180
185	184		
190	189		
195	194		
200	199		
205	204		
210	209		
215	214		
220	219		
225	224		
230	229		
235	234		
240	239		
245	244		
250	248		
255	254		
260	258		
265	264		
270	268		
275	274		
280	278		
285	284		
290	288		
295	294		
300	298		

GROUND AIRSPEED CALIBRATION

FLAPS 7° AND 15°	
GEAR DOWN	
CIAS	KCAS
50	57
55	61
60	66
65	70
70	75
75	79
80	84
85	88
90	93
95	98
100	102
105	107
110	112
115	116
120	120
125	125
130	130

MACHMETER CALIBRATION

ALL ALTITUDES GEAR UP FLAPS UP	
INDICATED MACH. NO.	CALIBRATED MACH. NO.
0.400	0.372
0.410	0.407
0.420	0.417
0.430	0.427
0.440	0.438
0.450	0.448
0.460	0.458
0.470	0.468
0.480	0.478
0.490	0.488
0.500	0.498
0.510	0.508
0.520	0.518
0.530	0.527
0.540	0.537
0.550	0.547
0.560	0.557
0.570	0.567
0.580	0.577
0.590	0.587
0.600	0.597
0.610	0.607
0.620	0.617
0.630	0.626
0.640	0.636
0.650	0.646
0.660	0.656
0.670	0.666
0.680	0.676
0.690	0.685
0.700	0.695
0.710	0.705
0.720	0.715
0.730	0.724
0.740	0.734
0.750	0.744
0.760	0.754

*(Also applicable for Standby System)

Figure 4-4

ALTIMETER POSITION CORRECTION - FEET

PILOT'S, COPILOT'S, AND STANDBY SYSTEMS

CONDITIONS:

FLAPS - UP, 7 OR 15 DEGREES
LANDING GEAR - UP

EXAMPLE:

A. AIRSPEED = 200 KIAS
B. PRESSURE ALTITUDE = 30,000 FEET
C. ALTIMETER POSITION CORRECTION = -42 FEET
ACTUAL PRESSURE ALTITUDE = 29,958 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	-12	-11	-9	-8	-7	-7	-7	-8	-10	-12	-16	-19	-24	-29	-34	-40	-45	-51	-57	-62	-67
1000	-13	-11	-9	-8	-7	-7	-8	-9	-10	-13	-16	-20	-24	-29	-35	-41	-47	-53	-59	-64	-69
2000	-13	-11	-10	-8	-8	-7	-8	-9	-11	-13	-17	-21	-25	-30	-36	-42	-48	-54	-60	-66	-71
3000	-14	-12	-10	-9	-8	-8	-8	-9	-11	-14	-17	-21	-26	-31	-37	-43	-50	-56	-62	-68	-73
4000	-14	-12	-10	-9	-8	-8	-8	-9	-11	-14	-18	-22	-27	-32	-38	-45	-51	-58	-64	-70	-75
5000	-14	-12	-11	-9	-8	-8	-9	-10	-12	-15	-18	-23	-28	-33	-39	-46	-53	-60	-66	-72	-78
6000	-15	-13	-11	-10	-9	-8	-9	-10	-12	-15	-19	-23	-28	-34	-41	-47	-54	-61	-68	-75	-80
7000	-15	-13	-11	-10	-9	-9	-9	-10	-13	-15	-19	-24	-29	-35	-42	-49	-56	-63	-70	-77	-83
8000	-16	-14	-12	-10	-9	-9	-9	-11	-13	-16	-20	-25	-30	-37	-43	-51	-58	-65	-73	-79	-85
9000	-16	-14	-12	-11	-10	-9	-10	-11	-13	-17	-21	-26	-31	-38	-45	-52	-60	-67	-75	-82	-88
10000	-17	-15	-13	-11	-10	-10	-10	-11	-14	-17	-21	-26	-32	-39	-46	-54	-62	-70	-77	-84	-91
11000	-18	-15	-13	-11	-10	-10	-10	-12	-14	-18	-22	-27	-33	-40	-48	-56	-64	-72	-80	-87	-94
12000	-18	-16	-13	-12	-11	-10	-11	-12	-15	-18	-23	-28	-34	-41	-49	-57	-66	-74	-82	-90	-97
13000	-19	-16	-14	-12	-11	-11	-11	-13	-15	-19	-23	-29	-36	-43	-51	-59	-68	-77	-85	-93	-100
14000	-19	-17	-14	-12	-11	-11	-12	-13	-16	-19	-24	-30	-37	-44	-52	-61	-70	-79	-88	-96	-103
15000	-20	-17	-15	-13	-12	-11	-12	-14	-16	-20	-25	-31	-38	-46	-54	-63	-73	-82	-91	-99	-106
16000	-21	-18	-15	-13	-12	-12	-12	-14	-17	-21	-26	-32	-39	-47	-56	-65	-75	-85	-94	-103	-110
17000	-21	-18	-16	-14	-12	-12	-13	-14	-17	-21	-27	-33	-41	-49	-58	-68	-77	-87	-97	-106	-114
18000	-22	-19	-16	-14	-13	-13	-13	-15	-18	-22	-28	-34	-42	-51	-60	-70	-80	-90	-100	-110	-118
19000	-23	-20	-17	-15	-13	-13	-14	-16	-19	-23	-29	-35	-43	-52	-62	-72	-83	-93	-104	-113	-122
20000	-24	-20	-18	-15	-14	-13	-14	-16	-19	-24	-30	-37	-45	-54	-64	-75	-86	-97	-107	-117	-126
21000	-25	-21	-18	-16	-14	-14	-15	-17	-20	-25	-31	-38	-46	-56	-66	-77	-89	-100	-111	-121	-130
22000	-25	-22	-19	-16	-15	-14	-15	-17	-21	-26	-32	-39	-48	-58	-69	-80	-92	-104	-115	-126	-135
23000	-26	-23	-20	-17	-15	-15	-16	-18	-21	-26	-33	-41	-50	-60	-71	-83	-95	-107	-119	-130	-140
24000	-27	-24	-20	-18	-16	-16	-16	-19	-22	-27	-34	-42	-52	-62	-74	-86	-98	-111	-123	-135	-145
25000	-28	-24	-21	-18	-17	-16	-17	-19	-23	-28	-35	-44	-53	-64	-76	-89	-102	-115	-128	-139	-150
26000	-29	-25	-22	-19	-17	-17	-18	-20	-24	-29	-37	-45	-55	-67	-79	-92	-106	-119	-132	-145	-155
27000	-30	-26	-23	-20	-18	-17	-18	-21	-25	-31	-38	-47	-57	-69	-82	-96	-110	-124	-137	-150	-161
28000	-32	-27	-23	-20	-19	-18	-19	-21	-26	-32	-39	-49	-60	-72	-85	-99	-114	-128	-142	-155	-167
29000	-33	-28	-24	-21	-19	-19	-20	-22	-27	-33	-41	-51	-62	-74	-88	-103	-118	-133	-148	-161	-173
30000	-34	-29	-25	-22	-20	-19	-20	-23	-28	-34	-42	-52	-64	-77	-92	-107	-122	-138	-153	-167	-179
31000	-35	-30	-26	-23	-21	-20	-21	-24	-29	-35	-44	-54	-67	-80	-95	-111	-127	-143	-159	-173	-186
32000	-37	-32	-27	-24	-22	-21	-22	-25	-30	-37	-46	-57	-69	-83	-99	-115	-132	-149	-165	-180	-193
33000	-38	-33	-28	-25	-22	-22	-23	-26	-31	-38	-48	-59	-72	-86	-102	-119	-137	-154	-171	-187	-201
34000	-40	-34	-29	-26	-23	-23	-24	-27	-32	-40	-49	-61	-75	-90	-106	-124	-142	-160	-178	-194	-209
35000	-41	-36	-31	-27	-24	-23	-25	-28	-34	-41	-51	-63	-78	-93	-111	-129	-148	-167	-185	-202	-217
36000	-43	-37	-32	-28	-25	-24	-26	-29	-35	-43	-53	-66	-81	-97	-115	-134	-154	-173	-192	-210	-225
37000	-45	-39	-33	-29	-26	-26	-27	-31	-37	-45	-56	-69	-85	-102	-121	-141	-161	-182	-202	-220	-236
38000	-47	-41	-35	-31	-28	-27	-28	-32	-38	-47	-59	-73	-89	-107	-127	-147	-169	-191	-212	-231	-248
39000	-50	-43	-37	-32	-29	-28	-30	-34	-40	-50	-62	-76	-93	-112	-133	-155	-177	-200	-222	-242	-260
40000	-52	-45	-39	-34	-31	-30	-31	-35	-42	-52	-65	-80	-98	-118	-139	-162	-186	-210	-233	-254	-273
41000	-55	-47	-41	-35	-32	-31	-33	-37	-44	-55	-68	-84	-103	-124	-146	-170	-195	-220	-244	-267	-286
42000	-57	-49	-43	-37	-34	-33	-34	-39	-47	-57	-71	-88	-108	-130	-154	-179	-205	-231	-257	-280	-301
43000	-60	-52	-45	-39	-35	-34	-36	-41	-49	-60	-75	-93	-113	-136	-161	-188	-215	-243	-269	-294	-315
44000	-63	-55	-47	-41	-37	-36	-38	-43	-51	-63	-79	-97	-119	-143	-169	-197	-226	-255	-282	-308	-331
45000	-66	-57	-49	-43	-39	-38	-40	-45	-54	-66	-82	-102	-124	-150	-177	-207	-237	-267	-296	-324	-347

Figure 4-5

ALTIMETER POSITION CORRECTION - FEET PILOT'S, COPILOT'S, AND STANDBY SYSTEMS

CONDITIONS:

EXAMPLE:

FLAPS - FULL, 7 OR 15 DEGREES
LANDING GEAR - DOWN

A. AIRSPEED = 150 KIAS
B. PRESSURE ALTITUDE = 20,000 FEET
C. ALTIMETER POSITION CORRECTION = 0 FEET
ACTUAL PRESSURE ALTITUDE = 20,000 FEET

ALT FEET	AIRSPEED - KIAS										
	80	90	100	110	120	130	140	150	160	170	180
0	-13	-11	-8	-6	-4	-2	0	0	0	0	-2
1000	-13	-11	-9	-6	-4	-2	0	0	0	0	-2
2000	-13	-11	-9	-6	-4	-2	0	0	0	0	-2
3000	-14	-12	-9	-7	-4	-2	0	0	0	0	-2
4000	-14	-12	-9	-7	-4	-2	0	0	0	0	-2
5000	-15	-12	-10	-7	-4	-2	0	0	0	0	-2
6000	-15	-13	-10	-7	-4	-2	0	0	0	0	-2
7000	-16	-13	-10	-7	-5	-2	0	0	0	0	-3
8000	-16	-14	-11	-8	-5	-2	0	0	0	0	-3
9000	-17	-14	-11	-8	-5	-2	0	0	0	0	-3
10000	-17	-15	-11	-8	-5	-2	0	0	0	0	-3
11000	-18	-15	-12	-8	-5	-2	0	0	0	0	-3
12000	-18	-16	-12	-9	-5	-3	0	0	0	0	-3
13000	-19	-16	-13	-9	-6	-3	0	0	0	0	-3
14000	-20	-17	-13	-9	-6	-3	0	0	0	0	-3
15000	-20	-17	-13	-10	-6	-3	0	0	0	0	-3
16000	-21	-18	-14	-10	-6	-3	0	0	0	0	-4
17000	-22	-18	-14	-10	-6	-3	0	0	0	0	-4
18000	-23	-19	-15	-11	-7	-3	0	0	0	0	-4
19000	-23	-20	-15	-11	-7	-3	0	0	0	0	-4
20000	-24	-20	-16	-12	-7	-3	-1	0	0	0	-4
21000	-25	-21	-17	-12	-8	-4	-1	0	0	0	-4
22000	-26	-22	-17	-12	-8	-4	-1	0	1	0	-4
23000	-27	-23	-18	-13	-8	-4	-1	0	1	0	-5
24000	-28	-23	-18	-13	-8	-4	-1	0	1	0	-5
25000	-29	-24	-19	-14	-9	-4	-1	0	1	0	-5
26000	-30	-25	-20	-14	-9	-4	-1	0	1	0	-5
27000	-31	-26	-21	-15	-9	-5	-1	0	1	0	-5
28000	-32	-27	-21	-15	-10	-5	-1	0	1	0	-6
29000	-33	-28	-22	-16	-10	-5	-1	1	1	0	-6
30000	-35	-29	-23	-17	-11	-5	-1	1	1	-1	-6
31000	-36	-30	-24	-17	-11	-5	-1	1	1	-1	-6
32000	-37	-31	-25	-18	-11	-6	-1	1	1	-1	-7
33000	-39	-33	-26	-19	-12	-6	-1	1	1	-1	-7
34000	-40	-34	-27	-19	-12	-6	-1	1	1	-1	-7
35000	-42	-35	-28	-20	-13	-6	-1	1	1	-1	-7
36000	-44	-37	-29	-21	-13	-7	-1	1	1	-1	-8
37000	-46	-39	-30	-22	-14	-7	-1	1	1	-1	-8
38000	-48	-40	-32	-23	-15	-7	-1	1	1	-1	-9
39000	-50	-42	-34	-24	-15	-8	-2	1	1	-1	-9
40000	-53	-45	-35	-26	-16	-8	-2	1	2	-1	-10
41000	-56	-47	-37	-27	-17	-8	-2	1	2	-1	-10
42000	-58	-49	-39	-28	-18	-9	-2	1	2	-1	-11
43000	-61	-52	-41	-30	-19	-9	-2	1	2	-1	-11
44000	-64	-54	-43	-31	-20	-10	-2	1	2	-1	-12
45000	-67	-57	-45	-33	-21	-10	-2	2	2	-1	-12

Figure 4-6

**ALTIMETER POSITION CORRECTION - FEET
PILOT'S AND COPILOT'S SYSTEMS****CONDITIONS:**

Flap - ANY POSITION
Landing Gear - UP

EXAMPLE:

A. Airspeed = 280 KIAS
B. Pressure Altitude = 30,000 FEET
C. Altimeter Position Correction = 20 FEET
Actual Pressure Altitude = 30,020 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
1000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
2000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
3000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
4000	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
5000	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20			
6000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20			
7000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30
8000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30
9000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	30	30	30
10000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30
11000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30
12000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30
13000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30
14000	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30
15000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30
16000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30
17000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30
18000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30
19000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30
20000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	20
21000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	20	20
22000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	30	30	20	20	20
23000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
24000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
25000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
26000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
27000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
28000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
29000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
30000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10
31000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10	
32000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10		
33000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10		
34000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10			
35000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10	10			
36000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10				
37000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10					
38000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10					
39000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	10						
40000	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10						
41000	10	20	20	20	20	20	20	20	20	20	20	20	20	10							
42000	10	20	20	20	20	20	20	20	20	20	20	20	20	10							
43000	10	20	20	20	20	20	20	20	20	20	20	20	20	10							
44000	20	20	20	20	20	20	20	20	20	20	20	10	10								
45000	20	20	20	20	20	20	20	20	20	20	20	10									

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-5

ALTIMETER POSITION CORRECTION - FEET PILOT'S AND COPILOT'S SYSTEMS

CONDITIONS:

Flap - ANY POSITION
Landing Gear - DOWN

EXAMPLE:

A. Airspeed = 170 KIAS
B. Pressure Altitude = 6000 FEET
C. Altimeter Position Correction = +30 FEET
Actual Pressure Altitude = 6030 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
1000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
2000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
3000	30	30	30	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
4000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
5000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
6000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
7000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
8000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
9000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
10000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
11000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
12000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
13000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
14000	40	40	40	40	40	40	40	30	30	30	30	30	30	30	30	30	30	30	30	30	30
15000	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-6

ALTIMETER POSITION CORRECTION - FEET STANDBY SYSTEMS

CONDITIONS:

FLAPS - UP, 7 OR 15 DEGREES
LANDING GEAR - UP

EXAMPLE:

A. AIRSPEED = 200 KIAS
B. PRESSURE ALTITUDE= 30,000 FEET
C. ALTIMETER POSITION CORRECTION = -42 FEET
ACTUAL PRESSURE ALTITUDE = 29,958 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	-12	-11	-9	-8	-7	-7	-7	-8	-10	-12	-16	-19	-24	-29	-34	-40	-45	-51	-57	-62	-67
1000	-13	-11	-9	-8	-7	-7	-8	-9	-10	-13	-16	-20	-24	-29	-35	-41	-47	-53	-59	-64	-69
2000	-13	-11	-10	-8	-8	-7	-8	-9	-11	-13	-17	-21	-25	-30	-36	-42	-48	-54	-60	-66	-71
3000	-14	-12	-10	-9	-8	-8	-8	-9	-11	-14	-17	-21	-26	-31	-37	-43	-50	-56	-62	-68	-73
4000	-14	-12	-10	-9	-8	-8	-8	-9	-11	-14	-18	-22	-27	-32	-38	-45	-51	-58	-64	-70	-75
5000	-14	-12	-11	-9	-8	-8	-9	-10	-12	-15	-18	-23	-28	-33	-39	-46	-53	-60	-66	-72	-78
6000	-15	-13	-11	-10	-9	-8	-9	-10	-12	-15	-19	-23	-28	-34	-41	-47	-54	-61	-68	-75	-80
7000	-15	-13	-11	-10	-9	-9	-9	-10	-13	-15	-19	-24	-29	-35	-42	-49	-56	-63	-70	-77	-83
8000	-16	-14	-12	-10	-9	-9	-9	-11	-13	-16	-20	-25	-30	-37	-43	-51	-58	-65	-73	-79	-85
9000	-16	-14	-12	-11	-10	-9	-10	-11	-13	-17	-21	-26	-31	-38	-45	-52	-60	-67	-75	-82	-88
10000	-17	-15	-13	-11	-10	-10	-10	-11	-14	-17	-21	-26	-32	-39	-46	-54	-62	-70	-77	-84	-91
11000	-18	-15	-13	-11	-10	-10	-10	-12	-14	-18	-22	-27	-33	-40	-48	-56	-64	-72	-80	-87	-94
12000	-18	-16	-13	-12	-11	-10	-11	-12	-15	-18	-23	-28	-34	-41	-49	-57	-66	-74	-82	-90	-97
13000	-19	-16	-14	-12	-11	-11	-11	-13	-15	-19	-23	-29	-36	-43	-51	-59	-68	-77	-85	-93	-100
14000	-19	-17	-14	-12	-11	-11	-12	-13	-16	-19	-24	-30	-37	-44	-52	-61	-70	-79	-88	-96	-103
15000	-20	-17	-15	-13	-12	-11	-12	-14	-16	-20	-25	-31	-38	-46	-54	-63	-73	-82	-91	-99	-106
16000	-21	-18	-15	-13	-12	-12	-12	-14	-17	-21	-26	-32	-39	-47	-56	-65	-75	-85	-94	-103	-110
17000	-21	-18	-16	-14	-12	-12	-13	-14	-17	-21	-27	-33	-41	-49	-58	-68	-77	-87	-97	-106	-114
18000	-22	-19	-16	-14	-13	-13	-13	-15	-18	-22	-28	-34	-42	-51	-60	-70	-80	-90	-100	-110	-118
19000	-23	-20	-17	-15	-13	-13	-14	-16	-19	-23	-29	-35	-43	-52	-62	-72	-83	-93	-104	-113	-122
20000	-24	-20	-18	-15	-14	-13	-14	-16	-19	-24	-30	-37	-45	-54	-64	-75	-86	-97	-107	-117	-126
21000	-25	-21	-18	-16	-14	-14	-15	-17	-20	-25	-31	-38	-46	-56	-66	-77	-89	-100	-111	-121	-130
22000	-25	-22	-19	-16	-15	-14	-15	-17	-21	-26	-32	-39	-48	-58	-69	-80	-92	-104	-115	-126	-135
23000	-26	-23	-20	-17	-15	-15	-16	-18	-21	-26	-33	-41	-50	-60	-71	-83	-95	-107	-119	-130	-140
24000	-27	-24	-20	-18	-16	-16	-16	-19	-22	-27	-34	-42	-52	-62	-74	-86	-98	-111	-123	-135	-145
25000	-28	-24	-21	-18	-17	-16	-17	-19	-23	-28	-35	-44	-53	-64	-76	-89	-102	-115	-128	-139	-150
26000	-29	-25	-22	-19	-17	-17	-18	-20	-24	-29	-37	-45	-55	-67	-79	-92	-106	-119	-132	-145	-155
27000	-30	-26	-23	-20	-18	-17	-18	-21	-25	-31	-38	-47	-57	-69	-82	-96	-110	-124	-137	-150	-161
28000	-32	-27	-23	-20	-19	-18	-19	-21	-26	-32	-39	-49	-60	-72	-85	-99	-114	-128	-142	-155	-167
29000	-33	-28	-24	-21	-19	-19	-20	-22	-27	-33	-41	-51	-62	-74	-88	-103	-118	-133	-148	-161	-173
30000	-34	-29	-25	-22	-20	-19	-20	-23	-28	-34	-42	-52	-64	-77	-92	-107	-122	-138	-153	-167	-179
31000	-35	-30	-26	-23	-21	-20	-21	-24	-29	-35	-44	-54	-67	-80	-95	-111	-127	-143	-159	-173	-186
32000	-37	-32	-27	-24	-22	-21	-22	-25	-30	-37	-46	-57	-69	-83	-99	-115	-132	-149	-165	-180	-193
33000	-38	-33	-28	-25	-22	-22	-23	-26	-31	-38	-48	-59	-72	-86	-102	-119	-137	-154	-171	-187	-201
34000	-40	-34	-29	-26	-23	-23	-24	-27	-32	-40	-49	-61	-75	-90	-106	-124	-142	-160	-178	-194	-209
35000	-41	-36	-31	-27	-24	-23	-25	-28	-34	-41	-51	-63	-78	-93	-111	-129	-148	-167	-185	-202	-217
36000	-43	-37	-32	-28	-25	-24	-26	-29	-35	-43	-53	-66	-81	-97	-115	-134	-154	-173	-192	-210	-225
37000	-45	-39	-33	-29	-26	-26	-27	-31	-37	-45	-56	-69	-85	-102	-121	-141	-161	-182	-202	-220	-236
38000	-47	-41	-35	-31	-28	-27	-28	-32	-38	-47	-59	-73	-89	-107	-127	-147	-169	-191	-212	-231	-248
39000	-50	-43	-37	-32	-29	-28	-30	-34	-40	-50	-62	-76	-93	-112	-133	-155	-177	-200	-222	-242	-260
40000	-52	-45	-39	-34	-31	-30	-31	-35	-42	-52	-65	-80	-98	-118	-139	-162	-186	-210	-233	-254	-273
41000	-55	-47	-41	-35	-32	-31	-33	-37	-44	-55	-68	-84	-103	-124	-146	-170	-195	-220	-244	-267	-286
42000	-57	-49	-43	-37	-34	-33	-34	-39	-47	-57	-71	-88	-108	-130	-154	-179	-205	-231	-257	-280	-301
43000	-60	-52	-45	-39	-35	-34	-36	-41	-49	-60	-75	-93	-113	-136	-161	-188	-215	-243	-269	-294	-315
44000	-63	-55	-47	-41	-37	-36	-38	-43	-51	-63	-79	-97	-119	-143	-169	-197	-226	-255	-282	-308	-331
45000	-66	-57	-49	-43	-39	-38	-40	-45	-54	-66	-82	-102	-124	-150	-177	-207	-237	-267	-296	-324	-347

Figure 4-5A

ALTIMETER POSITION CORRECTION - FEET STANDBY SYSTEMS

CONDITIONS:

EXAMPLE:

FLAPS - FULL, 7 OR 15 DEGREES
LANDING GEAR - DOWN

A. AIRSPEED = 150 KIAS
B. PRESSURE ALTITUDE= 20,000 FEET
C. ALTIMETER POSITION CORRECTION = 0 FEET
ACTUAL PRESSURE ALTITUDE = 20,000 FEET

ALT FEET	AIRSPEED - KIAS											
	80	90	100	110	120	130	140	150	160	170	180	
0	-13	-11	-8	-6	-4	-2	0	0	0	0	-2	
1000	-13	-11	-9	-6	-4	-2	0	0	0	0	-2	
2000	-13	-11	-9	-6	-4	-2	0	0	0	0	-2	
3000	-14	-12	-9	-7	-4	-2	0	0	0	0	-2	
4000	-14	-12	-9	-7	-4	-2	0	0	0	0	-2	
5000	-15	-12	-10	-7	-4	-2	0	0	0	0	-2	
6000	-15	-13	-10	-7	-4	-2	0	0	0	0	-2	
7000	-16	-13	-10	-7	-5	-2	0	0	0	0	-3	
8000	-16	-14	-11	-8	-5	-2	0	0	0	0	-3	
9000	-17	-14	-11	-8	-5	-2	0	0	0	0	-3	
10000	-17	-15	-11	-8	-5	-2	0	0	0	0	-3	
11000	-18	-15	-12	-8	-5	-2	0	0	0	0	-3	
12000	-18	-16	-12	-9	-5	-3	0	0	0	0	-3	
13000	-19	-16	-13	-9	-6	-3	0	0	0	0	-3	
14000	-20	-17	-13	-9	-6	-3	0	0	0	0	-3	
15000	-20	-17	-13	-10	-6	-3	0	0	0	0	-3	
16000	-21	-18	-14	-10	-6	-3	0	0	0	0	-4	
17000	-22	-18	-14	-10	-6	-3	0	0	0	0	-4	
18000	-23	-19	-15	-11	-7	-3	0	0	0	0	-4	
19000	-23	-20	-15	-11	-7	-3	0	0	0	0	-4	
20000	-24	-20	-16	-12	-7	-3	-1	0	0	0	-4	
21000	-25	-21	-17	-12	-8	-4	-1	0	0	0	-4	
22000	-26	-22	-17	-12	-8	-4	-1	0	1	0	-4	
23000	-27	-23	-18	-13	-8	-4	-1	0	1	0	-5	
24000	-28	-23	-18	-13	-8	-4	-1	0	1	0	-5	
25000	-29	-24	-19	-14	-9	-4	-1	0	1	0	-5	
26000	-30	-25	-20	-14	-9	-4	-1	0	1	0	-5	
27000	-31	-26	-21	-15	-9	-5	-1	0	1	0	-5	
28000	-32	-27	-21	-15	-10	-5	-1	0	1	0	-6	
29000	-33	-28	-22	-16	-10	-5	-1	1	1	0	-6	
30000	-35	-29	-23	-17	-11	-5	-1	1	1	-1	-6	
31000	-36	-30	-24	-17	-11	-5	-1	1	1	-1	-6	
32000	-37	-31	-25	-18	-11	-6	-1	1	1	-1	-7	
33000	-39	-33	-26	-19	-12	-6	-1	1	1	-1	-7	
34000	-40	-34	-27	-19	-12	-6	-1	1	1	-1	-7	
35000	-42	-35	-28	-20	-13	-6	-1	1	1	-1	-7	
36000	-44	-37	-29	-21	-13	-7	-1	1	1	-1	-8	
37000	-46	-39	-30	-22	-14	-7	-1	1	1	-1	-8	
38000	-48	-40	-32	-23	-15	-7	-1	1	1	-1	-9	
39000	-50	-42	-34	-24	-15	-8	-2	1	1	-1	-9	
40000	-53	-45	-35	-26	-16	-8	-2	1	2	-1	-10	
41000	-56	-47	-37	-27	-17	-8	-2	1	2	-1	-10	
42000	-58	-49	-39	-28	-18	-9	-2	1	2	-1	-11	
43000	-61	-52	-41	-30	-19	-9	-2	1	2	-1	-11	
44000	-64	-54	-43	-31	-20	-10	-2	1	2	-1	-12	
45000	-67	-57	-45	-33	-21	-10	-2	2	2	-1	-12	

Figure 4-6A

**ALTIMETER POSITION CORRECTION - FEET
PILOT'S AND COPILOT'S SYSTEMS****CONDITIONS:**

Flap - ANY POSITION
Landing Gear - UP

EXAMPLE:

A. Airspeed = 280 KIAS
B. Pressure Altitude = 30,000 FEET
C. Altimeter Position Correction = 20 FEET
Actual Pressure Altitude = 30,020 FEET

ALT FEET	AIRSPEED - KIAS																					
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	
0	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
1000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
2000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
3000	0	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
4000	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
5000	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20				
6000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20				
7000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	
8000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	
9000	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	30	30	30	
10000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	
11000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	30	30	30	30	
12000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	30	30	30	30	
13000	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	30	30	30	30	
14000	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	
15000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30	
16000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30	
17000	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	30	30	30	30	30	
18000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	
19000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	30	
20000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	30	20	
21000	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	30	30	30	20	20	
22000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	30	30	20	20	20	
23000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
24000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
25000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
26000	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
27000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
28000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
29000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
30000	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10	
31000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10		
32000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10			
33000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10			
34000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10				
35000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10	10				
36000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	10					
37000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10						
38000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10						
39000	10	10	20	20	20	20	20	20	20	20	20	20	20	20	10							
40000	10	20	20	20	20	20	20	20	20	20	20	20	20	20	10							
41000	10	20	20	20	20	20	20	20	20	20	20	20	20	10								
42000	10	20	20	20	20	20	20	20	20	20	20	20	20	10								
43000	10	20	20	20	20	20	20	20	20	20	20	20	20	10								
44000	20	20	20	20	20	20	20	20	20	20	20	10	10									
45000	20	20	20	20	20	20	20	20	20	20	20	10										

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-5

ALTIMETER POSITION CORRECTION - FEET PILOT'S AND COPILOT'S SYSTEMS

CONDITIONS:

Flap - ANY POSITION
Landing Gear - DOWN

EXAMPLE:

A. Airspeed = 170 KIAS
B. Pressure Altitude = 6000 FEET
C. Altimeter Position Correction = +30 FEET
Actual Pressure Altitude = 6030 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
1000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
2000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
3000	30	30	30	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
4000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
5000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
6000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30			
7000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
8000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
9000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
10000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
11000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
12000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
13000	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
14000	40	40	40	40	40	40	40	30	30	30	30	30	30	30	30	30	30	30	30	30	30
15000	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-6

**ALTIMETER POSITION CORRECTION - FEET
STANDBY SYSTEM****CONDITIONS:**

Flap - ANY POSITION
Landing Gear - UP

EXAMPLE:

A. Airspeed = 280 KIAS
B. Pressure Altitude = 30000 FEET
C. Altimeter Position Correction = -20 FEET
Actual Pressure Altitude = 29980 FEET

ALT FEET	AIRSPEED - KIAS																				
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	-10	-10	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0			
1000	-10	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0			
2000	-10	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0			
3000	-10	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0			
4000	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0			
5000	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0			
6000	-10	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0			
7000	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8000	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9000	-10	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10000	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11000	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12000	-10	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13000	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14000	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15000	-10	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16000	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10
17000	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10
18000	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10
19000	-10	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10
20000	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10
21000	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10
22000	-10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10
23000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10
24000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20
25000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20
26000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20
27000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-20
28000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-10
29000	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-20	-10
30000	0	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-10	-10
31000	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-10	-10	
32000	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-20	-10		
33000	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-20	-10	-10		
34000	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-20	-10			
35000	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-20	-20	-10	-10			
36000	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-10	-10				
37000	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-20	-20	-10					
38000	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-10	-10					
39000	0	0	0	0	0	0	0	0	0	-10	-10	-10	-20	-20	-10						
40000	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-10	-10						
41000	0	0	0	0	0	0	0	0	-10	-10	-10	-20	-10	-10							
42000	0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-10	-10							
43000	0	0	0	0	0	0	0	-10	-10	-10	-20	-10	-10								
44000	0	0	0	0	0	0	0	-10	-10	-10	-20	-10	-10								
45000	0	0	0	0	0	0	-10	-10	-10	-20	-20	-10									

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-5A

ALTIMETER POSITION CORRECTION - FEET STANDBY SYSTEM

CONDITIONS:

Flap - ANY POSITION
Landing Gear - DOWN

EXAMPLE:

A. Airspeed = 170 KIAS
B. Pressure Altitude = 6000 FEET
C. Altimeter Position Correction = +10 FEET
Actual Pressure Altitude = 6010 FEET

	AIRSPEED - KIAS																				
ALT FEET	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300
0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
1000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
2000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
3000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
4000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
5000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
6000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10			
7000	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	
8000	10	10	10	10	10	10	10	10	10	10	10	20	20	20	20	20	20	20	20	20	20
9000	10	10	10	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
10000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
11000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
12000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
13000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
14000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
15000	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

NOTE

Shaded areas are beyond V_{MO} and are provided for interpolation purposes only.

Figure 4-6A

STALL SPEEDS - KCAS

CONDITIONS:

Landing Gear - UP or DOWN
Engines - IDLE THRUST

ANGLE OF BANK DEG.	FLAP SETTING – UP WEIGHT – POUNDS													
	16300	15900	15500	15000	14500	14000	13500	13000	12500	12000	11500	11000	10500	10000
0	96	95	94	92	91	89	88	86	84	83	81	79	77	76
10	97	95	94	93	91	90	88	87	85	83	82	80	78	76
20	99	98	97	95	93	92	90	89	87	85	84	82	80	78
30	103	102	101	99	97	96	94	92	91	89	87	85	83	81
40	110	108	107	105	104	102	100	98	96	94	93	90	88	86
50	120	118	117	115	113	111	109	107	105	103	101	99	97	94
60	136	134	132	130	128	126	124	122	119	117	115	112	109	107

ANGLE OF BANK DEG.	FLAP SETTING – 7 DEGREES WEIGHT – POUNDS													
	16300	15900	15500	15000	14500	14000	13500	13000	12500	12000	11500	11000	10500	10000
0	93	92	91	89	88	86	85	83	82	80	78	77	75	73
10	94	92	91	90	88	87	85	84	82	81	79	77	75	74
20	96	95	93	92	90	89	87	86	84	83	81	79	77	75
30	100	99	97	96	94	93	91	89	88	86	84	82	81	79
40	106	105	104	102	100	99	97	95	93	91	90	88	86	84
50	116	114	113	111	109	108	106	104	102	100	98	96	93	91
60	131	130	128	126	124	122	120	118	115	113	111	108	106	103

ANGLE OF BANK DEG.	FLAP SETTING – 15 DEGREES WEIGHT – POUNDS													
	16300	15900	15500	15000	14500	14000	13500	13000	12500	12000	11500	11000	10500	10000
0	89	88	87	86	84	83	82	80	79	77	75	74	72	70
10	90	89	88	86	85	84	82	81	79	78	76	74	73	71
20	92	91	90	88	87	86	84	83	81	79	78	76	74	73
30	96	95	94	92	91	89	88	86	84	83	81	79	77	76
40	102	101	100	98	96	95	93	91	90	88	86	84	82	80
50	111	110	109	107	105	103	102	100	98	96	94	92	90	88
60	126	125	123	121	119	117	115	113	111	109	107	104	102	99

ANGLE OF BANK DEG.	FLAP SETTING – FULL WEIGHT – POUNDS													
	16300	15900	15500	15000	14500	14000	13500	13000	12500	12000	11500	11000	10500	10000
0	85	84	83	81	80	79	77	76	74	73	71	70	68	67
10	85	84	83	82	81	79	78	76	75	74	72	70	69	67
20	87	86	85	84	83	81	80	78	77	75	74	72	70	69
30	91	90	89	87	86	85	83	82	80	78	77	75	73	72
40	97	96	94	93	91	90	88	87	85	83	82	80	78	76
50	106	104	103	101	100	98	96	95	93	91	89	87	85	83
60	120	118	117	115	113	111	109	107	105	103	101	99	97	94

Figure 4-7

INTERNATIONAL STANDARD ATMOSPHERE (ISA)

ALTITUDE FEET	ISA DEG. C	ALTITUDE FEET	ISA DEG. C
SEA LEVEL	15.0	23000	-30.5
1000	13.0	24000	-32.5
2000	11.0	25000	-34.5
3000	9.1	26000	-36.5
4000	7.1	27000	-38.4
5000	5.1	28000	-40.4
6000	3.1	29000	-42.4
7000	1.1	30000	-44.4
8000	-0.8	31000	-46.3
9000	-2.8	32000	-48.3
10000	-4.8	33000	-50.3
11000	-6.8	34000	-52.3
12000	-8.8	35000	-54.2
13000	-10.7	36000	-56.2
14000	-12.7	37000	-56.5
15000	-14.7	38000	-56.5
16000	-16.7	39000	-56.5
17000	-18.7	40000	-56.5
18000	-20.6	41000	-56.5
19000	-22.6	42000	-56.5
20000	-24.6	43000	-56.5
21000	-26.6	44000	-56.5
22000	-28.5	45000	-56.5

Figure 4-8

TAKEOFF THRUST SETTING

THRUST SETTING PROCEDURE FOR TAKEOFF

Check takeoff thrust setting chart for the fan speed for the takeoff altitude and temperature (Refer to Figure 4-9). Set fan speed indicator counter at chart value. Before takeoff, move throttle until fan speed agrees with indicator counter. Takeoff thrust is allowed for a maximum of five minutes. Fan speeds above the values on the chart exceed the engine manufacturer's limit. Values below these lines will not meet the performance in this section.

NOTE

Indicated RAT may be unreliable when on the ground. Reported surface temperatures from the appropriate ground stations should be utilized for determining the takeoff thrust setting.

EXAMPLE 1:

Anti-Ice Systems = OFF

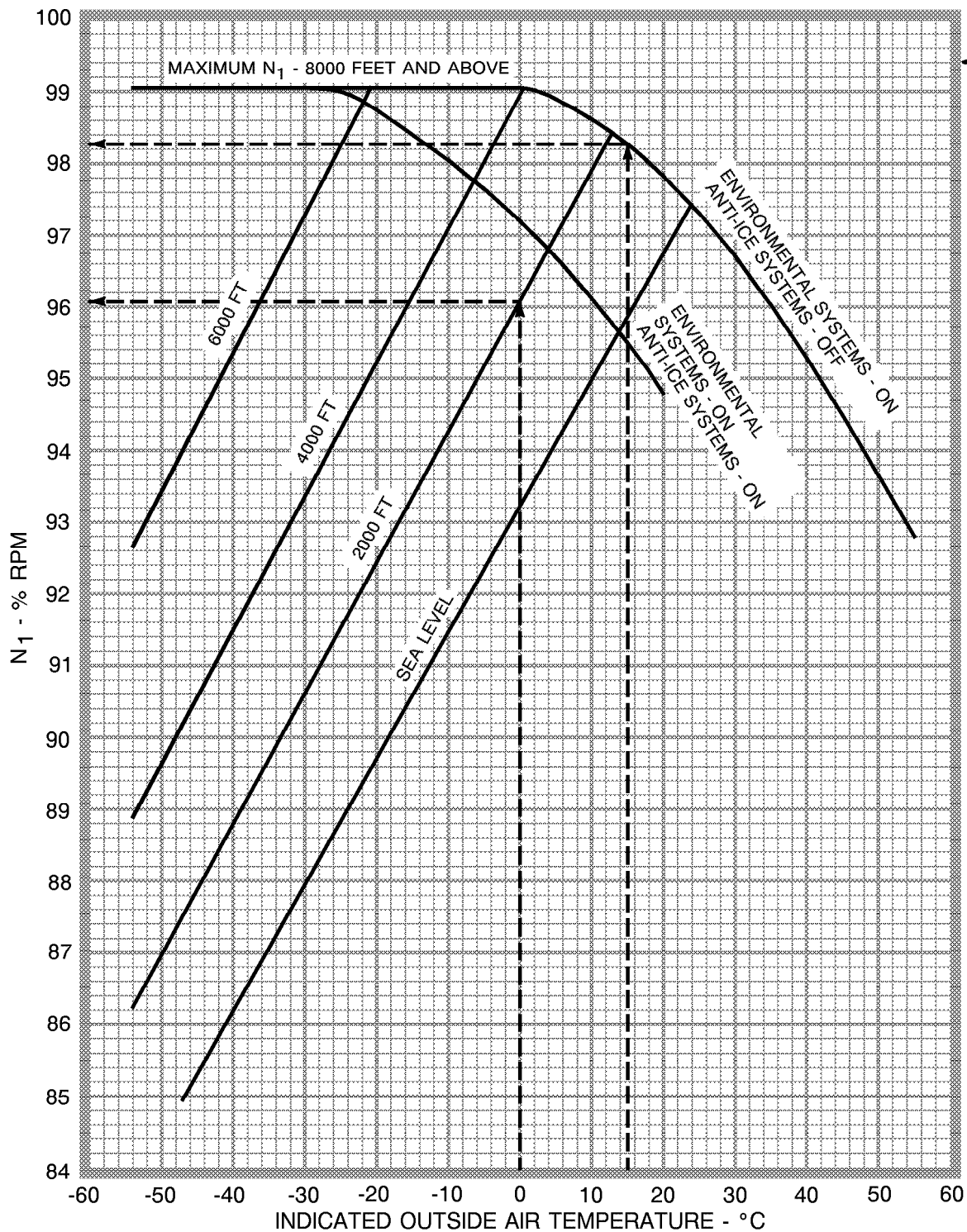
- A Ambient Temperature = 15°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 98.3% RPM

EXAMPLE 2:

Anti-Ice Systems = ON

- A Ambient Temperature = 0°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 96.1% RPM

TAKEOFF/GO AROUND THRUST SETTING



5684C6026

Figure 4-9

**MAXIMUM CONTINUOUS THRUST SETTING
ENROUTE CLIMB**

EXAMPLE 1:

Anti-Ice Systems = ON

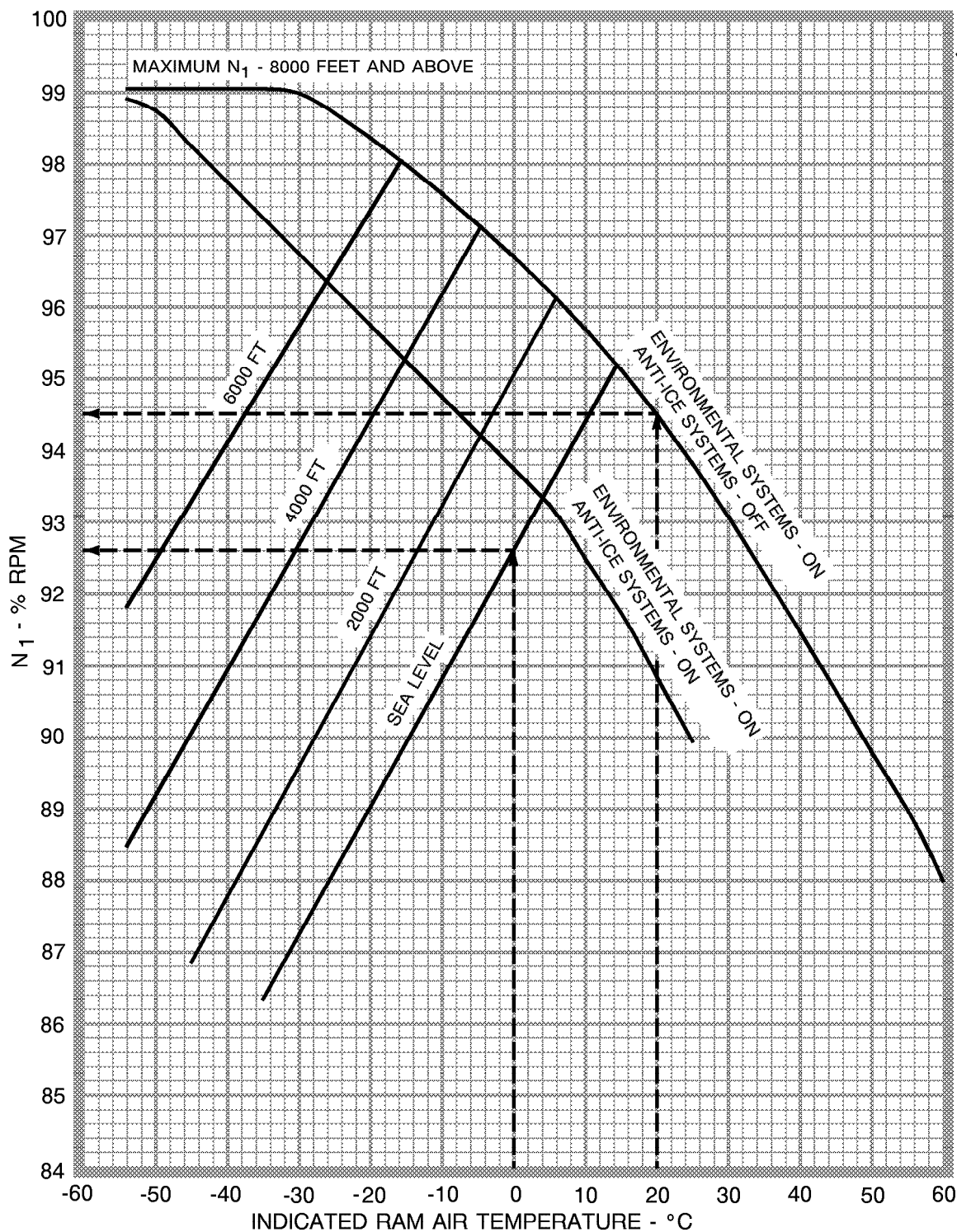
- A Indicated RAT = 0°C
- B Pressure Altitude = SEA LEVEL
- C N_1 = 92.6% RPM (Refer to Figure 4-10)

EXAMPLE 2:

Anti-Ice Systems = OFF

- A Indicated RAT = 20°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 94.5% RPM (Refer to Figure 4-10)

MAXIMUM CONTINUOUS THRUST SETTING ENROUTE CLIMB



5684C6027

Figure 4-10

BUFFET ONSET

LOW

EXAMPLE:
 INDICATED MACH = 0.40
 PRESSURE ALTITUDE = 25,000 FEET
 WEIGHT = 13,000 POUNDS
 (5896 KILOGRAMS)
 BUFFET ONSET
 LOAD FACTOR = 2.18 G'S
 BANK ANGLE = 63 DEGREES

HIGH

EXAMPLE:
 INDICATED MACH = 0.72
 PRESSURE ALTITUDE = 30,000 FEET
 WEIGHT = 14,000 POUNDS
 (6350 K KILOGRAMS)
 BUFFET ONSET
 LOAD FACTOR = 2.63 G'S
 BANK ANGLE = GREATER THAN 65 DEGREES

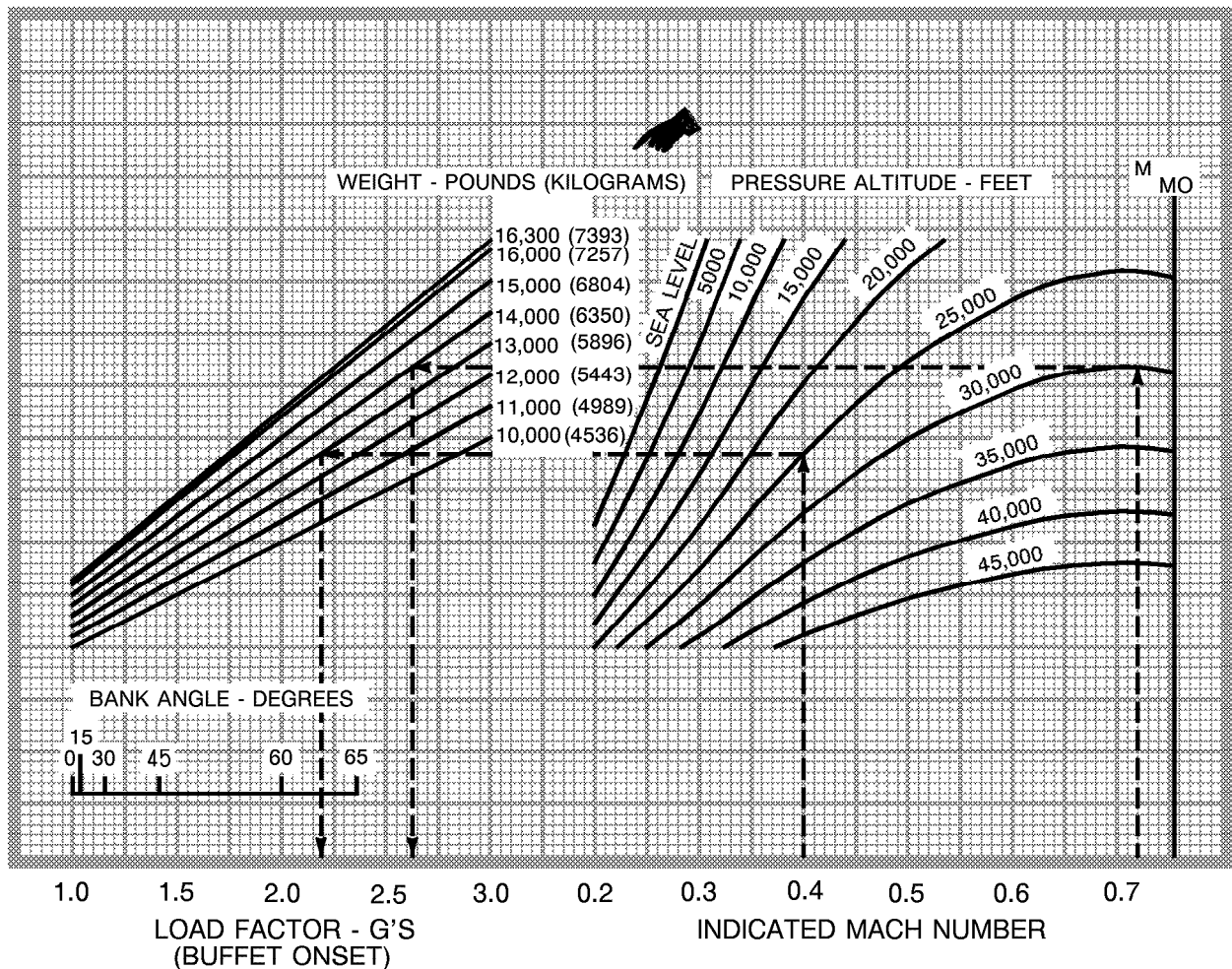
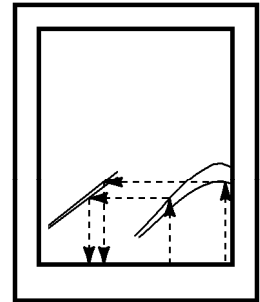


Figure 4-11

5684C6014A

CROSS WIND COMPONENT

EXAMPLE:

WIND VELOCITY = 30 KNOTS

ANGLE BETWEEN WIND DIRECTION AND RUNWAY = 30°

CROSSWIND COMPONENT = 15 KNOTS

WIND COMPONENT PARALLEL TO RUNWAY = 26 KNOTS

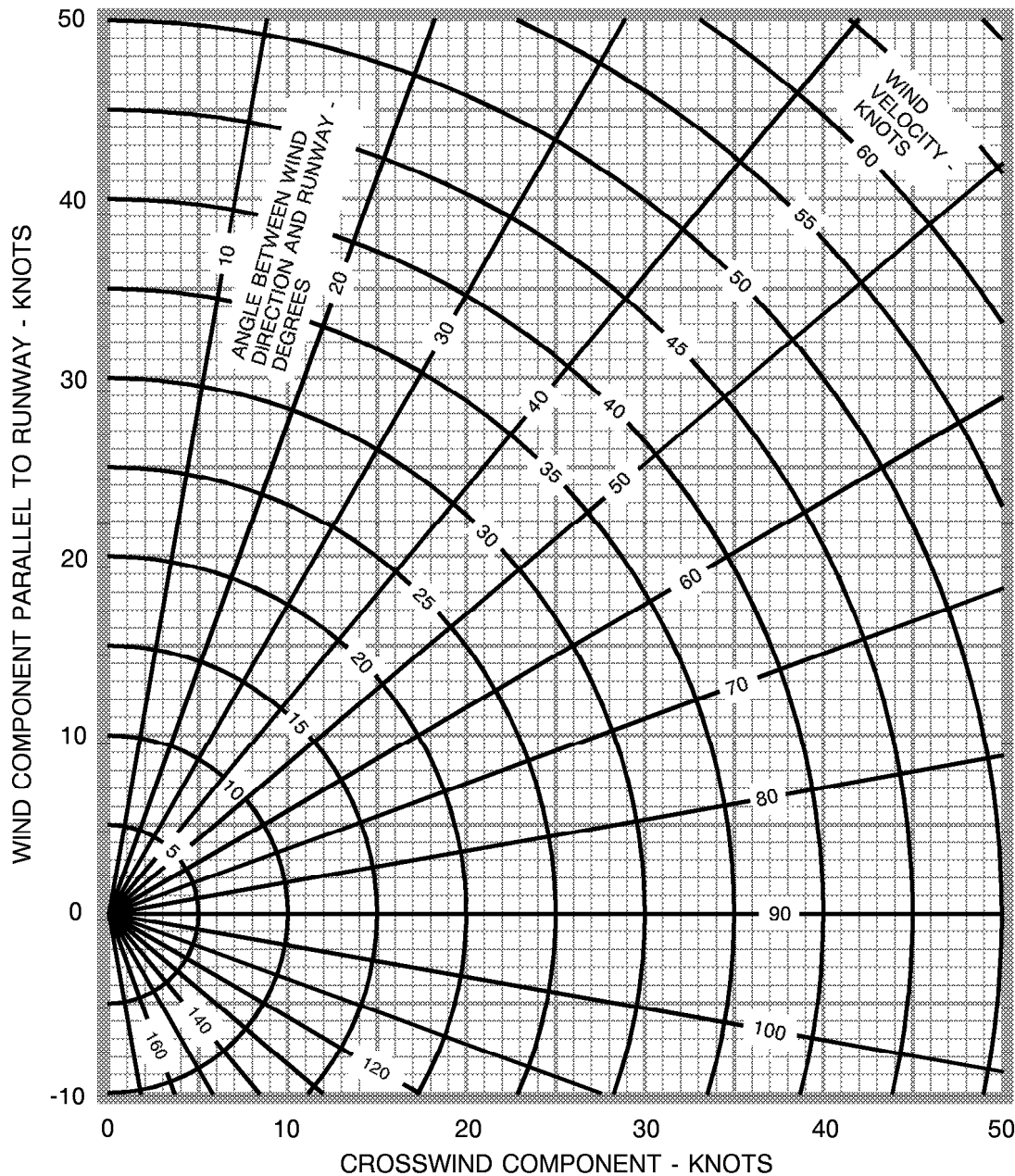
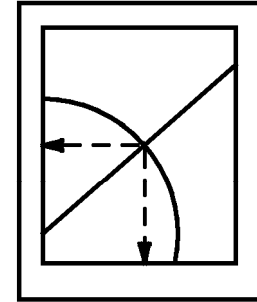


Figure 4-12

TAKEOFF

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TAKEOFF PERFORMANCE SIMPLIFIED CRITERIA

A simplified criteria is provided which is intended to cover the majority of situations where runway length is appreciably longer than required for this airplane. The other tabulated data gives more exact performance criteria through a range of conditions which include all but the most extreme cases.

The majority of takeoff situations results in field length margins that permit using a single set of values for speeds and power settings for takeoff. If the following conditions are met, the simplified procedures may be used.

1. No obstacle in flight path.
2. Anti-ice systems off.
3. Takeoff and approach flaps (15°).
4. Takeoff field length available = 5000 feet or longer.
5. No tail wind.
6. No runway gradient.
7. Dry paved runway.

The values to be used are as follows:

WEIGHT	16,300 POUNDS OR LESS	15,500 POUNDS OR LESS	14,500 POUNDS OR LESS
ALTITUDE OF AIRPORT	2000 FEET OR BELOW	4000 FEET OR BELOW	6000 FEET OR BELOW
AMBIENT TEMPERATURE BETWEEN	7°C AND 45°C	10°C AND 42°C	10°C AND 42°C
V ₁	98 KIAS	95 KIAS	92 KIAS
V _R	102 KIAS	99 KIAS	96 KIAS
V ₂	112 KIAS	109 KIAS	106 KIAS
SINGLE-ENGINE CLIMB SPEED	169 KIAS	165 KIAS	161 KIAS
TAKEOFF N ₁	94.5% RPM	95% RPM	95% RPM
SINGLE-ENGINE CLIMB N ₁	90.0% RPM	90.5% RPM	90.5% RPM

When conditions are other than those specified in the simplified criteria, the appropriate tabulated data must be referred to.

PROCEDURES FOR USE OF TAKEOFF PERFORMANCE TABLES

1. Determine gross weight of airplane for type of loading desired.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient (if applicable) and obstacles in the takeoff flight path. Determine that the temperature is within the ambient temperature limits found in Section II, Limitations.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum takeoff weight permitted by climb requirements (Figure 4-13 or Figure 4-15). If takeoff is to be made with anti-ice on, refer to Figure 4-14 or Figure 4-16. If this limitation restricts the gross weight, the pilot must off load weight until the requirement is met.
5. Using the takeoff weight determined in step 4, determine takeoff field length, V_1 , V_R , V_2 , V_{ENR} from Figure 4-18 (Flaps 7°) or Figure 4-20 (Flaps 15°).
6. For anti-ice on or runway gradients, V_1 and takeoff field length must be corrected using the correction table in Figure 4-17 (Flaps 7°) or Figure 4-19 (Flaps 15°).
7. If the available runway length is less than the required field length, the airplane weight must be reduced until this requirement can be met.
8. If the obstacle clearance is a factor, the single-engine takeoff flight path charts (Figures 4-21, 4-23, or 4-24 for Flaps 7° and Figures 4-25, 4-27, or 4-28 for Flaps 15°) must be used to determine if the obstacle can be cleared. If the obstacle cannot be cleared, the gross weight must be reduced until the flight path assures obstacle clearance.

NOTE

- During third segment acceleration, if after ten (10) minutes, enroute climb speed (V_{ENR}) has not been attained, hold altitude, reduce power to maximum continuous thrust and continue acceleration to the enroute climb speed (V_{ENR}).
9. Determine thrust settings for takeoff (Figure 4-9) and enroute climb (single-engine) (Figure 4-10).
 10. The first segment takeoff net climb and enroute net climb gradient tables, Figures 4-29, 4-30, and 4-33, are for advisory information only.

NOTE

- For inoperative antiskid system, multiply the takeoff field lengths obtained from Figure 4-18 and 4-20 by 1.25.
- For operation from wet, slush, snow and ice covered runways, refer to Section VII.

MAXIMUM TAKEOFF WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS

**FLAPS - 7°
ANTI-ICE - OFF**

ALTITUDE = 0		ALTITUDE = 1000		ALTITUDE = 2000		ALTITUDE = 3000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 54	16300	-54 TO 52	16300	-54 TO 50	16300	-54 TO 47	16300
						48	16130

ALTITUDE = 4000		ALTITUDE = 5000		ALTITUDE = 6000		ALTITUDE = 7000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 43	16300	-54 TO 40	16300	-54 TO 36	16300	-54 TO 31	16300
45	16110	44	15610	40	15730	35	15850
46	15870			42	15350	40	15130

ALTITUDE = 8000		ALTITUDE = 9000		ALTITUDE = 10000		ALTITUDE = 11000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 27	16300	-50 TO 23	16300	-54 TO 18	16300	-54 TO 13	16300
30	15960	25	16030	20	16100	15	16140
35	15260	30	15360	25	15440	20	15510
38	14760	35	14690	30	14780	25	14870
		36	14470	34	14170	30	14240
						32	13900

ALTITUDE = 12000		ALTITUDE = 13000		ALTITUDE = 14000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 8	16300	-54 TO 3	16300	-54 TO -4	16300
10	16150	5	16070	0	15920
15	15540	10	15500	5	15390
20	14930	15	14930	10	14870
25	14330	20	14360	15	14350
30	13720	25	13790	20	13830
		28	13370	25	13300
				26	13130

WHERE CONDITIONS ALLOW FOR 7° OR 15° FLAP SETTING, 15° FLAP SETTING IS DESIRED FOR THE SHORTER TAKEOFF DISTANCE.

Figure 4-13

**MAXIMUM TAKEOFF WEIGHT - POUNDS
PERMITTED BY CLIMB REQUIREMENTS****FLAPS - 7°
ANTI-ICE - ON**

ALTITUDE = 0		ALTITUDE = 1000		ALTITUDE = 2000		ALTITUDE = 3000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300

ALTITUDE = 4000		ALTITUDE = 5000		ALTITUDE = 6000		ALTITUDE = 7000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300

ALTITUDE = 8000		ALTITUDE = 9000		ALTITUDE = 10000		ALTITUDE = 11000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 8	16300	-30 TO 4	16300	-30 TO -1	16300
		10	16120	5 10	16180 15510	0 5 10	16210 15570 14930

ALTITUDE = 12000		ALTITUDE = 13000		ALTITUDE = 14000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO -6	16300	-30 TO -12	16300	-30 TO -18	16300
-5 0 5	16210 15600 14980	-10 -5 0	16160 15570 14990	-15 -10 -5	16050 15500 14950
10	14370	5 10	14400 13820	0 5 10	14400 13850 13310

WHERE CONDITIONS ALLOW FOR 7° OR 15° FLAP SETTING, 15° FLAP SETTING IS DESIRED FOR THE SHORTER TAKEOFF DISTANCE.

Figure 4-14

MAXIMUM TAKEOFF WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS

**FLAPS - 15°
ANTI-ICE - OFF**

ALTITUDE = 0		ALTITUDE = 1000		ALTITUDE = 2000		ALTITUDE = 3000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 52	16300	-54 TO 48	16300	-54 TO 45	16300	-54 TO 41	16300
54	15920	50 TO 52	16090 15680	50	15520	45 TO 48	15740 15200

ALTITUDE = 4000		ALTITUDE = 5000		ALTITUDE = 6000		ALTITUDE = 7000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 37	16300	-54 TO 33	16300	-54 TO 29	16300	-54 TO 25	16300
40	15940	35	16100	30	16230	30	15630
45	15180	40	15360	35	15520	35	14930
46	14950	44	14690	40	14810	40	14240
				42	14440		

ALTITUDE = 8000		ALTITUDE = 9000		ALTITUDE = 10000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-54 TO 20	16300	-54 TO 16	16300	-54 TO 11	16300
25	15720	20	15780	15	15820
30	15040	25	15120	20	15180
35	14360	30	14460	25	14540
38	13880	35 TO 36	13810 13590	30 TO 34	13910 13320

WHERE CONDITIONS ALLOW FOR 7° OR 15° FLAP SETTING, 15° FLAP SETTING IS DESIRED FOR THE SHORTER TAKEOFF DISTANCE.

Figure 4-15

**MAXIMUM TAKEOFF WEIGHT - POUNDS
PERMITTED BY CLIMB REQUIREMENTS****FLAPS - 15°
ANTI-ICE - ON**

ALTITUDE = 0		ALTITUDE = 1000		ALTITUDE = 2000		ALTITUDE = 3000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300

ALTITUDE = 4000		ALTITUDE = 5000		ALTITUDE = 6000		ALTITUDE = 7000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300	-30 TO 10	16300

ALTITUDE = 8000		ALTITUDE = 9000		ALTITUDE = 10000	
TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT	TEMP DEG. C	MAXIMUM TAKEOFF WEIGHT
-30 TO 10	16300	-30 TO 5	16300	-30 TO 0	16300
		10	15700	5	15750
				10	15100

WHERE CONDITIONS ALLOW FOR 7° OR 15° FLAP SETTING, 15° FLAP SETTING IS DESIRED FOR THE SHORTER TAKEOFF DISTANCE.

Figure 4-16

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 7°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure 4-18 and correct for runway gradient and anti-icing requirements using the tables below. If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to the distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 7°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT				
RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1 *	MULTIPLY DISTANCE BY	V_1 *	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.7 **	ADD 4 KNOTS	1.7 **
1% UPHILL	ADD 2 KNOTS	1.2 **	ADD 2 KNOTS	1.2 **
1% DOWNHILL	SUBTRACT 3 KNOTS	1.0	ADD 1 KNOT	1.02
2% DOWNHILL	SUBTRACT 6 KNOTS	1.0	ADD 1 KNOT	1.03

CORRECTION FACTORS - ANTI-ICE ON	
V_1 - KIAS	NO CORRECTION
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.16

* If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .

** Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 7000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure 4-18, the Takeoff Field Length is 3850.

V_1 is 101 KNOTS
 V_R is 106 KNOTS
 V_2 is 116 KNOTS
 V_{ENR} is 160 KNOTS

Figure 4-17

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								VR V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								VR V2	KIAS										
					10 KTS		20 KTS		30 KTS		10 KTS									20 KTS		30 KTS																	
					V1	DIST	V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT														
-25	96	3590	99	2920	100	2710	101	2520	102	2330	107	117	-25	95	3470	98	2820	99	2620	100	2430	101	2250	105	116														
-20	96	3660	99	2980	100	2770	101	2570	102	2380	107	117	-20	95	3530	98	2870	99	2670	100	2480	101	2300	105	116														
-15	96	3720	99	3030	100	2820	101	2620	102	2430	107	117	-15	95	3590	98	2930	99	2730	100	2530	101	2350	105	116														
-10	96	3790	99	3090	100	2880	101	2670	102	2480	107	117	-10	95	3660	98	2980	99	2780	100	2580	101	2390	106	116														
-5	96	3850	99	3150	100	2930	101	2730	102	2530	107	117	-5	95	3720	98	3040	99	2830	100	2630	100	2440	106	116														
0	96	3920	99	3210	100	2990	101	2780	101	2580	107	117	0	94	3790	98	3100	99	2880	99	2680	100	2490	105	116														
5	95	3990	99	3270	100	3040	100	2830	101	2630	107	117	5	94	3850	97	3150	98	2940	99	2730	100	2540	105	116														
10	95	4060	98	3320	99	3100	100	2890	101	2680	107	117	10	94	3920	97	3210	98	2990	99	2790	100	2590	105	116														
15	95	4120	98	3380	99	3160	100	2940	101	2740	107	117	15	94	3980	97	3270	98	3050	99	2840	100	2640	105	116														
20	95	4230	98	3470	99	3240	100	3020	101	2810	107	117	20	94	4080	97	3350	98	3130	99	2910	100	2710	105	116														
25	95	4330	99	3560	99	3320	100	3100	101	2880	107	117	25	94	4180	97	3430	98	3210	99	2990	100	2780	105	116														
30	96	4540	99	3740	100	3490	101	3250	102	3030	106	116	30	95	4380	98	3600	99	3360	100	3140	101	2920	105	115														
35	97	4810	100	3950	101	3690	102	3440	102	3200	106	116	35	96	4640	99	3810	100	3560	100	3320	101	3090	105	115														
40	98	5100	101	4200	102	3920	102	3650	103	3400	106	116	40	97	4920	100	4040	100	3780	101	3520	102	3280	105	115														
45	99	5440	102	4470	102	4170	103	3890	104	3620	106	116	45	98	5240	100	4300	101	4020	102	3750	103	3490	105	115														
50	100	5810	102	4770	103	4460	104	4150	104	3870	106	116	50	99	5590	101	4590	102	4290	103	4000	103	3720	105	115														
54	101	6120	103	5030	104	4700	104	4380	105	4080	106	116	54	99	5890	102	4840	103	4520	103	4220	104	3930	105	115														

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	FT	V1 DIST	FT	V1 DIST	FT					V1 DIST	FT	V1 DIST	FT	V1 DIST	FT	
			V1 DIST	FT	V1 DIST	FT	V1 DIST	FT					V1 DIST	FT	V1 DIST	FT	V1 DIST	FT	
-25	93 3280	96 2660	97 2470	98 2290	99 2120	104 114			-25	91 3100	94 2520	95 2340	96 2170	97 2000	102 113				
-20	93 3330	96 2710	97 2520	98 2340	99 2160	104 114			-20	91 3160	94 2560	95 2380	96 2210	97 2040	102 113				
-15	93 3390	96 2760	97 2570	98 2390	99 2210	104 114			-15	91 3210	94 2610	95 2430	96 2250	97 2090	102 113				
-10	93 3450	96 2810	97 2620	98 2430	98 2250	104 114			-10	91 3260	94 2660	95 2480	96 2300	97 2130	102 113				
-5	93 3510	96 2860	97 2670	97 2480	98 2300	104 114			-5	91 3320	94 2710	95 2520	96 2340	96 2170	102 113				
0	92 3570	96 2920	97 2720	97 2520	98 2340	104 114			0	91 3380	94 2760	95 2570	96 2390	96 2210	102 113				
5	92 3630	96 2970	96 2770	97 2570	98 2390	104 114			5	90 3430	94 2810	94 2620	95 2430	96 2250	102 113				
10	92 3690	95 3020	96 2820	97 2620	98 2430	104 114			10	90 3490	93 2860	94 2660	95 2480	96 2300	102 113				
15	92 3750	95 3080	96 2870	97 2670	98 2480	104 114			15	90 3550	93 2910	94 2710	95 2520	96 2340	102 113				
20	92 3840	95 3150	96 2940	97 2740	98 2550	104 114			20	90 3630	93 2970	94 2770	95 2580	96 2400	102 112				
25	92 3930	95 3230	96 3020	97 2810	98 2610	104 114			25	90 3710	93 3040	94 2840	95 2640	96 2460	102 112				
30	93 4120	96 3390	97 3160	98 2950	99 2740	104 114			30	91 3880	94 3180	95 2970	96 2770	97 2570	102 112				
35	94 4360	97 3580	98 3340	99 3120	99 2900	104 114			35	92 4100	95 3360	96 3140	97 2930	97 2720	102 112				
40	95 4620	98 3800	99 3550	99 3310	100 3080	104 114			40	93 4340	96 3560	97 3330	97 3100	98 2880	102 112				
45	96 4920	99 4040	99 3770	100 3520	101 3270	104 114			45	94 4610	97 3790	97 3540	98 3300	99 3070	102 112				
50	97 5240	99 4300	100 4020	101 3750	101 3490	104 114			50	95 4910	97 4030	98 3770	99 3510	100 3260	102 112				
54	98 5520	100 4530	101 4230	101 3950	102 3670	104 114			54	96 5170	98 4240	99 3960	99 3690	100 3440	102 112				

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST	FT	V1 DIST	FT	V1 DIST	FT									V1 DIST	FT	V1 DIST	FT	V1 DIST	FT		
-25	89	2930	92	2380	93	2210	94	2040	95	1890	100	111	-25	88	2830	90	2240	91	2080	92	1930	93	1780	98	110		
-20	89	2980	92	2420	93	2250	94	2080	95	1930	100	111	-20	88	2880	90	2280	91	2120	92	1960	93	1810	98	110		
-15	89	3030	92	2470	93	2290	94	2130	95	1970	100	111	-15	88	2930	90	2330	91	2160	92	2000	93	1850	98	110		
-10	89	3080	92	2510	93	2340	94	2170	95	2000	100	111	-10	88	2980	90	2370	91	2200	92	2040	93	1890	98	110		
-5	89	3140	92	2560	93	2380	94	2210	95	2040	100	111	-5	88	3040	90	2410	91	2240	92	2080	93	1920	98	110		
0	89	3190	92	2600	93	2420	94	2250	94	2080	100	111	0	88	3090	90	2450	91	2280	92	2120	92	1960	98	110		
5	89	3240	92	2650	93	2470	94	2290	94	2130	100	111	5	88	3140	90	2500	91	2320	92	2160	92	2000	98	110		
10	88	3290	92	2690	92	2510	93	2330	94	2170	100	111	10	88	3190	90	2540	91	2360	91	2200	92	2040	98	110		
15	88	3350	91	2740	92	2550	93	2380	94	2200	100	111	15	88	3240	89	2580	90	2410	91	2240	92	2070	98	110		
20	88	3420	91	2810	92	2620	93	2430	94	2260	100	111	20	87	3270	90	2640	90	2460	91	2290	92	2130	98	110		
25	89	3500	92	2870	92	2680	93	2490	94	2320	100	111	25	87	3300	90	2700	90	2520	91	2350	92	2180	98	110		
30	89	3650	92	2990	93	2790	94	2600	95	2420	100	111	30	87	3440	90	2820	91	2630	92	2450	93	2270	98	109		
35	90	3840	93	3150	94	2940	95	2740	95	2550	100	110	35	88	3600	91	2960	92	2760	92	2570	93	2380	98	109		
40	91	4070	94	3340	95	3120	95	2900	96	2700	100	110	40	89	3810	92	3130	92	2920	93	2710	94	2520	98	109		
45	92	4320	95	3550	95	3310	96	3080	97	2870	100	110	45	90	4040	93	3320	93	3100	94	2880	95	2680	98	109		
50	93	4600	95	3770	96	3520	97	3280	98	3050	100	110	50	91	4300	93	3530	94	3290	95	3060	95	2850	98	108		
54	94	4830	96	3970	97	3700	97	3450	98	3210	100	110	54	92	4520	94	3710	95	3460	95	3220	96	2990	98	108		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	89 2800	89 2130	89 1960	90 1810	91 1670	97 109	-25	89 2770	89 2110	89 1920	89 1740	89 1580	95 107
-20	89 2850	89 2170	89 2000	90 1850	91 1700	97 109	-20	89 2820	89 2150	89 1960	89 1770	89 1610	95 107
-15	89 2900	89 2210	89 2030	90 1880	91 1740	97 109	-15	89 2870	89 2190	89 2000	89 1810	89 1640	95 107
-10	88 2950	88 2250	89 2070	90 1920	91 1770	97 109	-10	89 2920	89 2240	89 2030	89 1850	89 1670	95 107
-5	88 3000	88 2290	89 2110	90 1950	91 1810	97 109	-5	89 2970	89 2280	89 2070	89 1880	89 1700	95 107
0	88 3050	88 2330	89 2150	90 1990	90 1840	97 109	0	89 3020	89 2320	89 2110	89 1920	89 1730	95 107
5	88 3100	88 2370	89 2180	90 2030	90 1880	97 109	5	88 3070	88 2350	88 2150	88 1950	88 1770	95 107
10	88 3150	88 2420	89 2220	90 2060	90 1910	97 109	10	88 3120	88 2400	88 2180	88 1990	88 1800	95 107
15	88 3200	88 2460	88 2260	89 2100	90 1950	97 109	15	88 3170	88 2440	88 2220	88 2020	88 1830	95 107
20	87 3230	87 2490	88 2310	89 2150	90 2000	97 108	20	88 3190	88 2460	88 2240	88 2040	88 1870	95 107
25	87 3260	88 2540	88 2370	89 2200	90 2040	96 108	25	87 3220	87 2480	87 2260	87 2070	88 1910	95 107
30	85 3230	88 2650	89 2470	90 2300	91 2130	96 108	30	85 3180	86 2480	87 2320	88 2150	89 2000	95 106
35	86 3390	89 2780	90 2590	90 2410	91 2240	96 107	35	84 3180	87 2610	87 2430	88 2260	89 2090	94 106
40	87 3570	89 2920	90 2720	91 2540	92 2350	96 107	40	85 3340	87 2740	88 2550	89 2370	90 2200	94 105
45	88 3780	90 3100	91 2890	92 2690	92 2500	96 107	45	86 3530	88 2890	89 2700	90 2510	90 2330	94 105
50	89 4020	91 3290	92 3070	93 2860	93 2650	96 107	50	87 3750	89 3070	90 2860	90 2660	91 2470	94 105
54	90 4220	92 3460	93 3220	93 3000	94 2790	96 107	54	87 3930	90 3220	90 3000	91 2790	92 2590	94 105

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	89 2750	89 2100	89 1910	89 1730	89 1560	94 107	-25	90 2730	90 2090	90 1900	90 1720	90 1560	94 108
-20	89 2800	89 2140	89 1950	89 1760	89 1590	94 107	-20	90 2780	90 2130	90 1940	90 1760	90 1590	94 108
-15	89 2850	89 2180	89 1980	89 1800	89 1630	94 107	-15	89 2820	89 2170	89 1970	89 1790	89 1620	94 108
-10	89 2900	89 2220	89 2020	89 1840	89 1660	94 107	-10	89 2870	89 2210	89 2010	89 1830	89 1660	94 108
-5	89 2950	89 2260	89 2060	89 1870	89 1690	94 107	-5	89 2920	89 2250	89 2050	89 1860	89 1690	94 108
0	89 2990	89 2300	89 2100	89 1910	89 1730	94 107	0	89 2970	89 2280	89 2080	89 1900	89 1720	94 108
5	89 3040	89 2340	89 2130	89 1940	89 1760	93 107	5	89 3010	89 2320	89 2120	89 1930	89 1750	94 107
10	89 3090	89 2380	89 2170	89 1970	89 1790	93 106	10	89 3060	89 2360	89 2160	89 1960	89 1780	94 107
15	89 3140	89 2420	89 2210	89 2010	89 1820	93 106	15	89 3110	89 2400	89 2190	89 2000	89 1820	94 107
20	88 3160	88 2440	88 2230	88 2030	88 1840	93 106	20	88 3130	88 2420	88 2210	88 2020	88 1830	93 107
25	87 3190	87 2460	87 2240	87 2040	87 1860	93 106	25	88 3150	88 2440	88 2230	88 2030	88 1850	93 106
30	86 3140	86 2420	86 2210	86 2020	86 1870	93 105	30	86 3110	86 2400	86 2200	86 2000	86 1810	91 104
35	83 3080	84 2440	85 2270	86 2110	87 1960	93 104	35	84 3040	84 2340	84 2140	84 1970	85 1820	91 103
40	83 3130	85 2560	86 2390	87 2220	87 2060	92 104	40	81 2980	83 2390	84 2230	85 2070	85 1920	90 102
45	83 3300	86 2700	87 2510	87 2330	88 2160	92 103	45	81 3080	84 2520	84 2340	85 2180	86 2020	90 102
50	84 3490	87 2850	87 2660	88 2470	89 2290	92 103	50	82 3250	84 2650	85 2470	86 2290	86 2130	90 101
54	85 3660	87 2990	88 2790	89 2590	89 2410	92 103	54	83 3400	85 2780	86 2590	86 2400	87 2230	90 101

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	90 2710	90 2080	90 1890	90 1720	90 1560	95 109	-25	90 2700	90 2070	90 1890	90 1720	90 1570	96 110
-20	90 2760	90 2120	90 1930	90 1750	90 1590	95 109	-20	90 2740	90 2110	90 1930	90 1750	90 1600	96 110
-15	90 2810	90 2160	90 1970	90 1790	90 1620	95 109	-15	90 2790	90 2150	90 1960	90 1790	90 1630	96 110
-10	90 2850	90 2200	90 2000	90 1820	90 1650	95 109	-10	90 2840	90 2190	90 2000	90 1820	90 1660	96 110
-5	90 2900	90 2240	90 2040	90 1860	90 1680	95 109	-5	90 2880	90 2230	90 2040	90 1850	90 1690	96 110
0	90 2950	90 2270	90 2080	90 1890	90 1720	95 109	0	90 2930	90 2270	90 2070	90 1890	90 1710	96 110
5	89 2990	89 2310	89 2110	89 1920	89 1750	95 108	5	90 2970	90 2300	90 2110	90 1920	90 1750	95 110
10	89 3040	89 2350	89 2150	89 1960	89 1780	95 108	10	90 3020	90 2340	90 2140	90 1950	90 1780	95 109
15	89 3080	89 2390	89 2180	89 1990	89 1810	95 108	15	90 3060	90 2380	90 2180	90 1990	90 1810	95 109
20	89 3110	89 2410	89 2200	89 2010	89 1830	94 108	20	89 3090	89 2400	89 2190	89 2000	89 1820	95 109
25	88 3130	88 2420	88 2220	88 2020	88 1840	93 107	25	88 3100	88 2410	88 2210	88 2020	88 1840	94 108
30	86 3080	86 2380	86 2180	86 1990	86 1800	91 104	30	87 3050	87 2370	87 2170	87 1980	87 1800	92 105
35	84 3010	84 2330	84 2120	84 1930	84 1750	89 102	35	84 2980	84 2310	84 2110	84 1920	84 1750	89 102
40	81 2940	81 2270	82 2070	82 1920	83 1780	88 101	40	82 2910	82 2250	82 2050	82 1870	82 1700	86 99
45	79 2880	81 2350	82 2180	83 2020	84 1870	88 100	45	79 2840	79 2190	80 2020	81 1880	81 1740	86 99
50	80 3030	82 2470	83 2300	84 2130	84 1970	88 100	50	77 2810	80 2290	80 2130	81 1970	82 1830	86 98
54	80 3160	83 2570	83 2400	84 2220	85 2060	88 99	54	78 2930	80 2390	81 2220	82 2060	82 1900	86 98

Figure 4-18 (Sheet 2 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S							
					10 KTS		20 KTS		30 KTS		VR	V2						10 KTS		20 KTS		30 KTS		VR	V2
					V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST		
-25	96	3680	99	3000	100	2790	101	2600	102	2400	107	117	-25	95	3560	98	2900	99	2700	100	2510	100	2320	106	116
-20	96	3750	99	3060	100	2850	101	2650	102	2460	107	117	-20	95	3620	98	2960	99	2750	100	2560	100	2370	106	116
-15	96	3820	99	3120	100	2910	101	2700	101	2510	107	117	-15	94	3690	98	3010	99	2810	99	2610	100	2420	106	116
-10	95	3890	99	3180	100	2960	100	2760	101	2560	107	117	-10	94	3750	97	3070	98	2860	99	2660	100	2470	106	116
-5	95	3960	98	3240	99	3020	100	2810	101	2610	107	117	-5	94	3820	97	3130	98	2910	99	2710	100	2520	106	116
0	95	4020	98	3300	99	3080	100	2860	101	2660	107	117	0	94	3880	97	3180	98	2970	99	2760	100	2570	106	116
5	95	4090	98	3360	99	3130	100	2920	101	2710	107	117	5	94	3950	97	3240	98	3020	99	2820	100	2620	106	116
10	95	4160	98	3420	99	3190	100	2980	101	2770	107	117	10	94	4020	97	3300	98	3080	99	2870	100	2670	106	116
15	95	4270	98	3510	99	3280	100	3050	101	2840	107	117	15	94	4120	97	3380	98	3160	99	2950	100	2740	105	116
20	95	4420	98	3640	99	3400	100	3170	101	2950	107	117	20	94	4270	97	3510	98	3280	99	3060	100	2840	105	116
25	96	4600	99	3780	100	3540	101	3300	101	3070	107	116	25	95	4430	98	3650	99	3410	100	3180	100	2960	105	115
30	97	4860	100	4000	100	3740	101	3490	102	3250	106	116	30	95	4690	98	3860	99	3600	100	3360	101	3130	105	115
35	97	5150	100	4240	101	3960	102	3700	103	3440	106	116	35	96	4960	99	4080	100	3820	101	3560	102	3320	105	115
40	98	5480	101	4510	102	4210	103	3930	103	3660	106	116	40	97	5270	100	4340	101	4050	102	3780	102	3520	105	115
45	99	5840	102	4800	103	4490	103	4190	104	3900	106	116	45	98	5620	101	4630	102	4320	102	4030	103	3760	105	115
50	100	6240	103	5130	103	4800	104	4470	105	4170	106	116	50	99	6000	102	4940	102	4610	103	4300	104	4010	105	115
52	101	6410	103	5270	104	4920	104	4590	105	4280	106	116	52	100	6160	102	5070	103	4740	103	4420	104	4120	105	115

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
					10 KTS		20 KTS		30 KTS							VR	V2	10 KTS		20 KTS							30 KTS		VR	V2	10 KTS		20 KTS		30 KTS		VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								V1 DIST	V1 DIST	V1 DIST	V1 DIST						V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST

WEIGHT = 14500 LBS									VENR = 160 KIAS									WEIGHT = 14000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S																	
					10 KTS		20 KTS		30 KTS		VR	V2						10 KTS		20 KTS		30 KTS													
					V1 DIST KI/AS	FT	V1 DIST KI/AS	FT	V1 DIST KI/AS	FT								V1 DIST KI/AS	FT	V1 DIST KI/AS	FT	V1 DIST KI/AS	FT												
-25	89	3010	92	2450	93	2270	94	2110	95	1950	100	111	-25	89	2940	90	2310	91	2140	92	1990	93	1830	98	110										
-20	89	3060	92	2490	93	2320	94	2150	95	1990	100	111	-20	89	2990	90	2350	91	2180	92	2020	93	1870	98	110										
-15	89	3110	92	2540	93	2360	94	2190	94	2030	100	111	-15	88	3050	90	2390	91	2230	92	2060	92	1910	98	110										
-10	89	3170	92	2590	93	2410	93	2240	94	2070	100	111	-10	88	3100	90	2440	91	2270	91	2100	92	1950	98	110										
-5	88	3220	91	2630	92	2450	93	2280	94	2110	100	111	-5	88	3160	90	2480	90	2310	91	2140	92	1990	98	110										
0	88	3270	91	2680	92	2490	93	2320	94	2150	100	111	0	88	3210	89	2520	90	2350	91	2180	92	2020	98	110										
5	88	3320	91	2720	92	2540	93	2360	94	2190	100	111	5	88	3270	89	2570	90	2390	91	2220	92	2060	98	110										
10	88	3380	91	2770	92	2590	93	2410	94	2230	100	111	10	88	3320	89	2610	90	2430	91	2270	92	2100	98	110										
15	88	3460	91	2840	92	2650	93	2460	94	2290	100	111	15	88	3350	89	2670	90	2490	91	2320	92	2150	98	110										
20	88	3570	91	2930	92	2740	93	2550	94	2370	100	111	20	87	3360	89	2760	90	2570	91	2400	92	2230	98	110										
25	89	3690	92	3030	93	2830	94	2640	94	2450	100	111	25	87	3480	90	2860	91	2660	92	2480	92	2310	98	109										
30	90	3880	93	3190	93	2980	94	2780	95	2580	100	110	30	88	3640	90	2990	91	2790	92	2600	93	2420	98	109										
35	91	4100	93	3370	94	3150	95	2930	96	2730	100	110	35	89	3840	91	3160	92	2950	93	2740	94	2550	98	109										
40	92	4350	94	3580	95	3340	96	3110	96	2900	100	110	40	90	4070	92	3340	93	3120	94	2910	94	2700	98	109										
45	93	4620	95	3800	96	3550	96	3310	97	3080	100	110	45	91	4320	93	3550	94	3320	94	3090	95	2870	98	108										
50	94	4920	96	4040	97	3780	97	3520	98	3280	100	110	50	92	4600	94	3780	94	3530	95	3290	96	3060	98	108										
52	94	5050	96	4150	97	3870	97	3610	98	3360	100	110	52	92	4710	94	3870	95	3620	95	3370	96	3130	98	108										

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST													
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT										
-25	89 2910	89 2220	89 2020	90 1870	91 1720	97 109	-25	89 2880	89 2200	89 2000	89 1820	89 1640	95 107																		
-20	89 2960	89 2260	89 2060	90 1900	91 1760	97 109	-20	89 2930	89 2240	89 2040	89 1850	89 1680	95 107																		
-15	89 3020	89 2300	89 2100	90 1940	90 1790	97 109	-15	89 2990	89 2290	89 2080	89 1890	89 1710	95 107																		
-10	89 3070	89 2350	89 2140	89 1980	90 1830	97 109	-10	89 3040	89 2330	89 2120	89 1930	89 1750	95 107																		
-5	89 3120	89 2390	89 2180	89 2020	90 1870	97 109	-5	89 3090	89 2370	89 2160	89 1970	89 1780	95 107																		
0	89 3180	89 2440	89 2220	89 2050	90 1900	97 109	0	89 3140	89 2420	89 2200	89 2000	89 1820	95 107																		
5	88 3230	88 2480	88 2260	89 2090	90 1940	97 109	5	89 3200	89 2460	89 2240	89 2040	89 1850	95 107																		
10	88 3280	88 2520	88 2300	89 2130	90 1970	97 109	10	89 3250	89 2500	89 2280	89 2080	89 1890	95 107																		
15	88 3310	88 2550	88 2340	89 2180	90 2020	97 109	15	88 3280	88 2520	88 2310	88 2100	88 1910	95 107																		
20	87 3310	88 2590	88 2420	89 2250	90 2090	96 108	20	87 3270	87 2520	87 2300	87 2110	88 1960	95 107																		
25	85 3290	88 2680	89 2500	90 2330	90 2160	96 108	25	86 3250	86 2520	87 2350	88 2180	88 2030	95 107																		
30	86 3430	88 2810	89 2620	90 2440	91 2270	96 107	30	84 3220	86 2640	87 2460	88 2290	89 2120	94 106																		
35	86 3600	89 2950	90 2750	91 2570	91 2380	96 107	35	84 3380	87 2770	88 2580	89 2400	89 2230	94 105																		
40	87 3800	90 3120	91 2910	91 2710	92 2520	96 107	40	85 3550	88 2910	88 2720	89 2530	90 2350	94 105																		
45	88 4040	91 3320	92 3090	92 2880	93 2680	96 107	45	86 3770	89 3090	89 2880	90 2680	91 2490	94 105																		
50	89 4290	92 3520	92 3290	93 3060	94 2850	96 107	50	87 4000	89 3280	90 3060	91 2850	91 2640	94 105																		
52	90 4400	92 3610	93 3370	93 3140	94 2920	96 107	52	88 4100	90 3360	91 3140	91 2920	92 2710	94 105																		

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S								VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S								VR V2 KIAS																
			10 KTS		20 KTS		30 KTS		10 KTS						20 KTS		30 KTS																						
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST																					
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT																				
-25	90 2860	90 2190	90 1990	90 1810	90 1630	94 107	-25	90 2830	90 2180	90 1980	90 1800	90 1630	95 108																										
-20	89 2910	89 2230	89 2030	89 1840	89 1670	94 107	-20	90 2880	90 2220	90 2020	90 1840	90 1660	95 108																										
-15	89 2960	89 2270	89 2070	89 1880	89 1700	94 107	-15	90 2930	90 2260	90 2060	90 1870	90 1700	95 108																										
-10	89 3010	89 2310	89 2110	89 1920	89 1740	94 107	-10	90 2990	90 2300	90 2100	90 1910	90 1730	95 108																										
-5	89 3060	89 2360	89 2150	89 1960	89 1770	94 107	-5	90 3040	90 2340	90 2140	90 1950	90 1770	95 108																										
0	89 3110	89 2400	89 2190	89 1990	89 1810	94 107	0	89 3090	89 2380	89 2180	89 1980	89 1800	95 108																										
5	89 3160	89 2440	89 2230	89 2030	89 1840	94 107	5	89 3140	89 2420	89 2220	89 2020	89 1840	95 108																										
10	89 3220	89 2480	89 2270	89 2070	89 1880	94 107	10	89 3190	89 2470	89 2250	89 2060	89 1870	95 108																										
15	88 3240	88 2500	88 2290	88 2090	88 1900	93 106	15	89 3210	89 2490	89 2270	89 2070	89 1890	94 107																										
20	87 3230	87 2500	87 2280	87 2080	87 1890	93 106	20	88 3200	88 2480	88 2270	88 2070	88 1880	93 106																										
25	86 3220	86 2480	86 2270	86 2060	86 1890	93 105	25	86 3180	86 2460	86 2250	86 2050	86 1860	91 104																										
30	84 3150	84 2470	85 2300	86 2140	87 1980	93 105	30	84 3120	84 2410	84 2200	84 2000	85 1850	91 103																										
35	82 3160	85 2590	86 2410	86 2240	87 2080	92 104	35	82 3060	83 2420	84 2250	84 2090	85 1940	90 103																										
40	83 3320	86 2720	86 2540	87 2360	88 2190	92 103	40	81 3110	83 2540	84 2370	85 2200	86 2040	90 102																										
45	84 3510	86 2870	87 2680	88 2490	88 2310	92 103	45	82 3270	84 2680	85 2490	85 2320	86 2150	90 101																										
50	85 3720	87 3050	88 2840	88 2650	89 2460	92 103	50	83 3460	85 2830	85 2640	86 2450	87 2270	90 101																										
52	85 3810	88 3120	88 2910	89 2710	89 2520	92 103	52	83 3540	85 2900	86 2700	86 2510	87 2330	90 101																										

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
			KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT			
-25	90 2820	90 2170	90 1980	90 1800	90 1630	95 109	-25	91 2800	91 2160	91 1970	91 1790	91 1630	96 110		
-20	90 2860	90 2210	90 2010	90 1830	90 1660	95 109	-20	91 2850	91 2200	91 2010	91 1830	91 1660	96 110		
-15	90 2910	90 2250	90 2050	90 1870	90 1690	95 109	-15	90 2900	90 2240	90 2050	90 1870	90 1700	96 110		
-10	90 2960	90 2290	90 2090	90 1900	90 1730	95 109	-10	90 2950	90 2280	90 2090	90 1900	90 1730	96 110		
-5	90 3010	90 2330	90 2130	90 1940	90 1760	95 109	-5	90 3000	90 2320	90 2120	90 1940	90 1760	96 110		
0	90 3060	90 2370	90 2170	90 1980	90 1800	95 109	0	90 3050	90 2360	90 2160	90 1970	90 1800	96 110		
5	90 3110	90 2410	90 2210	90 2010	90 1830	95 109	5	90 3090	90 2400	90 2200	90 2010	90 1830	96 110		
10	90 3160	90 2450	90 2240	90 2050	90 1860	95 109	10	90 3140	90 2440	90 2240	90 2040	90 1860	96 110		
15	89 3190	89 2470	89 2260	89 2070	89 1880	95 108	15	89 3160	89 2460	89 2260	89 2060	89 1880	95 109		
20	88 3170	88 2460	88 2250	88 2060	88 1870	93 107	20	88 3150	88 2450	88 2240	88 2050	88 1870	94 108		
25	86 3150	86 2440	86 2240	86 2040	86 1860	92 105	25	87 3130	87 2430	87 2220	87 2030	87 1850	92 106		
30	84 3090	84 2390	84 2180	84 1990	84 1810	89 102	30	85 3060	85 2370	85 2170	85 1980	85 1800	89 103		
35	82 3020	82 2330	82 2130	82 1950	83 1810	88 101	35	82 2990	82 2310	82 2110	82 1930	82 1750	87 100		
40	79 2950	81 2370	82 2200	83 2050	83 1890	88 100	40	80 2920	80 2250	80 2060	80 1900	81 1760	86 99		
45	79 3050	82 2490	82 2320	83 2150	84 1990	88 100	45	77 2850	79 2310	80 2150	81 1990	82 1850	86 98		
50	80 3210	82 2620	83 2440	84 2270	84 2100	88 99	50	78 2980	80 2430	81 2260	81 2100	82 1940	86 98		
52	80 3280	83 2680	83 2500	84 2320	85 2150	88 99	52	78 3050	80 2480	81 2310	82 2140	82 1980	86 97		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS											
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS		V1 DIST	10 KTS		20 KTS	30 KTS	VR	V2	10 KTS	V1 DIST		10 KTS	20 KTS		30 KTS	VR	V2									
	KIAS	FT		KIAS	FT	KIAS			FT		KIAS	FT		KIAS	FT			KIAS	FT		KIAS	FT		KIAS			FT	KIAS	FT	KIAS	FT				
-25	95	3780	99 3090	100 2880	100 2680	101 2480	107	117	-25	94	3650	97 2980	98 2780	99 2580	100 2390	106	116	-20	95	3850	98 3150	99 2940	100 2730	101 2540	107	117	-20	94	3720	97 3040	98 2840	99 2640	100 2450	106	116
-15	95	3920	98 3210	99 3000	100 2790	101 2590	107	117	-15	94	3790	97 3100	98 2890	99 2690	100 2500	106	116	-10	95	3990	98 3270	99 3050	100 2840	101 2640	107	117	-10	94	3860	97 3160	98 2950	99 2740	100 2550	106	116
-5	95	4060	98 3330	99 3110	100 2900	101 2690	107	117	-5	94	3920	97 3220	98 3000	99 2800	100 2600	106	116	0	95	4130	98 3390	99 3170	100 2950	101 2750	107	117	0	93	3980	97 3270	98 3060	99 2850	99 2650	106	116
5	94	4200	98 3460	99 3230	100 3010	100 2800	107	117	5	93	4050	97 3330	97 3110	98 2900	99 2700	106	116	10	94	4270	98 3520	99 3290	99 3070	100 2860	107	117	10	93	4120	96 3400	97 3170	98 2960	99 2750	106	116
15	95	4450	98 3670	99 3430	100 3200	101 2980	107	117	15	94	4290	97 3540	98 3310	99 3080	100 2870	105	115	20	95	4670	99 3850	100 3600	100 3360	101 3130	107	116	20	94	4500	97 3710	98 3470	99 3240	100 3010	105	115
25	96	4920	99 4060	100 3790	101 3540	102 3300	106	116	25	95	4740	98 3910	99 3650	100 3410	101 3180	105	115	30	97	5210	100 4290	101 4010	102 3750	102 3490	106	116	30	96	5020	99 4130	100 3870	101 3610	101 3360	105	115
35	98	5530	101 4550	102 4260	102 3970	103 3710	106	116	35	97	5320	100 4380	100 4100	101 3830	102 3570	105	115	40	99	5880	102 4850	102 4530	103 4230	104 3940	106	116	40	98	5660	100 4660	101 4360	102 4070	103 3790	105	115
45	100	6280	102 5170	103 4840	104 4510	104 4210	106	116	45	99	6040	101 4980	102 4650	103 4340	103 4050	105	115	50	101	6710	103 5520	104 5160	104 4820	105 4500	106	116	50	100	6450	102 5310	103 4960	103 4640	104 4320	105	115

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS																							
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	V1 DIST	10 KTS		20 KTS	30 KTS		VR	V2	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2															
	KIAS	FT		KIAS	FT	KIAS			FT	KIAS	FT		KIAS	FT				KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT								
-25	92	3460	95 2820	96 2630	97 2440	98 2260	104 114			-25	90	3270	94 2670	94 2480	95 2300	96 2130	102 113			-20	92	3520	95 2870	96 2680	97 2490	98 2310	104 114			-20	90	3330	93 2720	94 2530	95 2350	96 2180	102 113		
-15	92	3580	95 2930	96 2730	97 2540	98 2360	104 114			-15	90	3390	93 2770	94 2580	95 2400	96 2220	102 113			-10	92	3640	95 2980	96 2780	97 2590	98 2410	104 114			-10	90	3440	93 2820	94 2630	95 2450	96 2270	102 113		
-5	92	3700	95 3040	96 2830	97 2640	98 2450	104 114			-5	90	3500	93 2870	94 2680	95 2490	96 2310	102 113			0	92	3760	95 3090	96 2880	97 2690	98 2500	104 114			0	90	3560	93 2920	94 2720	95 2540	96 2360	102 113		
5	91	3830	95 3150	96 2940	97 2740	97 2550	104 114			5	90	3620	93 2970	94 2780	95 2590	96 2400	102 113			10	91	3890	95 3200	96 2990	96 2790	97 2600	104 114			10	90	3680	93 3030	94 2830	95 2630	95 2450	102 113		
10	91	3890	95 3200	96 2990	96 2790	97 2600	104 114			10	90	3680	93 3030	94 2830	95 2630	95 2450	102 113			15	92	4040	95 3330	96 3110	97 2900	98 2700	104 114			15	90	3810	93 3140	94 2930	95 2730	96 2540	102 112		
20	93	4240	96 3490	96 3260	97 3040	98 2830	104 114			20	91	3980	94 3280	94 3060	95 2850	96 2660	102 112			25	93	4460	96 3670	97 3430	98 3200	99 2980	104 114			25	91	4190	94 3450	95 3220	96 3000	97 2800	102 112		
30	94	4710	97 3880	98 3630	99 3390	99 3150	104 114			30	92	4420	95 3640	96 3400	97 3180	97 2960	102 112			35	95	4990	98 4110	99 3850	99 3590	100 3340	104 114			35	93	4680	96 3860	97 3600	97 3360	98 3130	102 112		
40	96	5310	99 4370	99 4090	100 3810	101 3550	104 114			40	94	4970	97 4090	97 3830	98 3570	99 3330	102 112			45	97	5660	99 4660	100 4350	101 4060	101 3790	104 114			45	95	5290	97 4360	98 4070	99 3800	99 3540	102 112		
50	98	6030	100 4970	101 4650	101 4340	102 4050	104 114			50	96	5650	98 4650	99 4340	99 4050	100 3780	102 112																						

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS																							
				10 KTS		20 KTS		30 KTS		10 KTS						20 KTS		30 KTS																					
	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	VR	V2														
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-25	89	3090	92	2520	93	2340	93	2170	94	2010	100	111	-25	89	3060	90	2370	91	2210	92	2050	92	1890	98	110														
-20	89	3150	91	2570	92	2390	93	2220	94	2060	100	111	-20	89	3120	90	2420	91	2250	91	2090	92	1930	98	110														
-15	88	3210	91	2610	92	2440	93	2260	94	2100	100	111	-15	89	3170	89	2460	90	2290	91	2130	92	1970	98	110														
-10	88	3270	91	2660	92	2480	93	2310	94	2140	100	111	-10	89	3230	89	2510	90	2340	91	2170	92	2010	98	110														
-5	88	3330	91	2710	92	2530	93	2350	94	2180	100	111	-5	89	3290	89	2550	90	2380	91	2210	92	2050	98	110														
0	88	3390	91	2750	92	2570	93	2390	94	2220	100	111	0	89	3350	89	2590	90	2420	91	2250	92	2090	98	110														
5	88	3450	91	2810	92	2620	93	2440	94	2260	100	111	5	89	3410	89	2640	90	2460	91	2290	92	2130	98	110														
10	88	3510	91	2860	92	2660	93	2480	94	2310	100	111	10	88	3460	89	2690	90	2510	91	2340	92	2170	98	110														
15	88	3600	91	2960	92	2760	93	2580	94	2390	100	111	15	87	3450	89	2790	90	2600	91	2420	92	2250	98	110														
20	89	3750	92	3080	93	2880	93	2680	94	2500	100	111	20	87	3530	90	2900	91	2710	91	2530	92	2350	98	109														
25	89	3930	92	3230	93	3020	94	2810	95	2620	100	110	25	87	3690	90	3030	91	2830	92	2640	93	2460	98	109														
30	90	4150	93	3410	94	3190	95	2970	95	2770	100	110	30	88	3880	91	3190	92	2980	93	2780	93	2580	98	109														
35	91	4390	94	3610	95	3370	95	3150	96	2930	100	110	35	89	4100	92	3380	93	3150	93	2940	94	2730	98	109														
40	92	4650	95	3830	95	3580	96	3340	97	3110	100	110	40	90	4350	93	3580	93	3340	94	3120	95	2900	98	109														
45	93	4950	95	4080	96	3810	97	3550	97	3310	100	110	45	91	4620	93	3810	94	3560	95	3320	95	3090	98	108														
50	94	5270	96	4340	97	4060	98	3780	98	3520	100	110	50	92	4920	94	4050	95	3780	95	3530	96	3280	98	108														

Figure 4-18 (Sheet 5 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2		TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2															
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT								
-25	89	3030	89	2310	89	2110	89	1930	90	1780	97	109	-25	89	3000	89	2300	89	2090	89	1900	89	1720	95	107														
-20	89	3080	89	2360	89	2150	89	1960	90	1820	97	109	-20	89	3050	89	2340	89	2130	89	1940	89	1760	95	107														
-15	89	3140	89	2400	89	2190	89	2000	90	1850	97	109	-15	89	3110	89	2380	89	2170	89	1980	89	1790	95	107														
-10	89	3190	89	2450	89	2230	89	2040	90	1890	97	109	-10	89	3160	89	2430	89	2220	89	2020	89	1830	95	107														
-5	89	3250	89	2500	89	2280	89	2080	90	1930	97	109	-5	89	3220	89	2480	89	2260	89	2060	89	1870	95	107														
0	89	3310	89	2550	89	2320	89	2110	90	1960	97	109	0	89	3280	89	2520	89	2310	89	2100	89	1910	95	107														
5	89	3370	89	2590	89	2360	89	2150	90	2000	97	109	5	89	3330	89	2570	89	2350	89	2140	89	1940	95	107														
10	89	3420	89	2640	89	2410	89	2190	90	2040	97	109	10	89	3390	89	2610	89	2390	89	2180	89	1980	95	107														
15	87	3400	87	2620	88	2440	89	2270	90	2110	97	108	15	88	3360	88	2590	88	2370	88	2160	88	1980	95	107														
20	85	3360	88	2730	89	2550	89	2370	90	2200	96	108	20	86	3320	86	2560	87	2390	87	2220	88	2060	95	107														
25	85	3470	88	2850	89	2660	90	2480	91	2300	96	107	25	84	3270	86	2670	87	2500	88	2320	89	2160	94	106														
30	86	3640	89	2990	90	2790	90	2600	91	2420	96	107	30	84	3410	87	2800	88	2620	88	2430	89	2260	94	106														
35	87	3840	90	3150	90	2940	91	2740	92	2550	96	107	35	85	3580	87	2940	88	2750	89	2560	90	2380	94	105														
40	88	4060	90	3340	91	3120	92	2910	93	2700	96	107	40	86	3790	88	3110	89	2910	90	2710	90	2520	94	105														
45	89	4310	91	3550	92	3310	93	3090	93	2870	96	107	45	87	4020	89	3300	90	3080	90	2870	91	2670	94	105														
50	90	4590	92	3770	93	3520	93	3280	94	3060	96	107	50	88	4270	90	3510	91	3280	91	3050	92	2840	94	105														

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																										
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																																																																																																																																																																																																																																																																																																																																																																																																	
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																																																																																																																																																																																																																																																																																																																																																																																																			
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 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KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																				
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																						
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST																					
-25	91	2930	91	2260	91	2060	91	1880	91	1700	96	110	-25	91	2910	91	2250	91	2060	91	1880	91	1700	97	111														
-20	90	2980	90	2300	90	2100	90	1910	90	1740	96	110	-20	91	2960	91	2290	91	2100	91	1910	91	1740	97	111														
-15	90	3030	90	2340	90	2140	90	1950	90	1770	96	110	-15	91	3010	91	2340	91	2140	91	1950	91	1770	97	111														
-10	90	3080	90	2390	90	2180	90	1990	90	1810	96	110	-10	91	3060	91	2380	91	2180	91	1990	91	1810	97	111														
-5	90	3140	90	2430	90	2220	90	2030	90	1850	96	110	-5	91	3120	91	2420	91	2220	91	2030	91	1850	97	111														
0	90	3190	90	2480	90	2270	90	2070	90	1880	96	110	0	91	3170	91	2470	91	2260	91	2070	91	1880	97	111														
5	90	3240	90	2520	90	2310	90	2110	90	1920	96	110	5	90	3220	90	2510	90	2300	90	2100	90	1920	97	111														
10	90	3290	90	2560	90	2350	90	2140	90	1950	96	110	10	90	3270	90	2550	90	2340	90	2140	90	1950	97	111														
15	88	3270	88	2540	88	2320	88	2120	88	1930	94	108	15	89	3240	89	2530	89	2310	89	2120	89	1930	95	109														
20	87	3220	87	2500	87	2290	87	2090	87	1900	92	105	20	87	3190	87	2480	87	2270	87	2080	87	1890	92	106														
25	84	3160	84	2450	84	2240	84	2040	84	1860	89	102	25	85	3130	85	2430	85	2230	85	2030	85	1850	90	103														
30	82	3100	82	2400	82	2190	82	1990	83	1830	88	101	30	83	3060	83	2380	83	2170	83	1980	83	1800	87	100														
35	80	3030	81	2390	82	2230	82	2070	83	1920	88	101	35	80	3000	80	2320	80	2120	80	1930	81	1780	86	99														
40	79	3070	81	2520	82	2340	83	2180	84	2020	88	100	40	78	2930	79	2330	80	2170	81	2020	81	1870	86	98														
45	80	3230	82	2650	83	2470	83	2290	84	2130	88	99	45	77	3000	80	2460	80	2290	81	2120	82	1970	86	98														
50	81	3410	83	2800	84	2610	84	2420	85	2250	88	99	50	78	3160	80	2580	81	2410	82	2240	82	2070	86	97														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS																	
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS								
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS									
	V1	DIST	V1	DIST	V1	V1	V1			V1	DIST	V1	DIST	V1	V1	V1									
	KIAS	FT	KIAS	FT	KIAS	KIAS	KIAS			KIAS	FT	KIAS	FT	KIAS	KIAS	KIAS									
-30	95	3820	98	3120	99	2910	100	2700	101	2510	107	117	-30	94	3690	97	3010	98	2810	99	2610	100	2420	106	116
-25	95	3890	98	3180	99	2970	100	2760	101	2570	107	117	-25	94	3760	97	3080	98	2870	99	2670	100	2480	106	116
-20	95	3960	98	3250	99	3030	100	2820	101	2620	107	117	-20	94	3830	97	3140	98	2920	99	2720	100	2530	106	116
-15	95	4040	98	3310	99	3090	100	2880	101	2680	107	117	-15	93	3900	97	3200	98	2980	99	2780	99	2580	106	116
-10	94	4110	98	3370	99	3150	100	2940	100	2730	107	117	-10	93	3960	97	3260	97	3040	98	2830	99	2630	106	116
-5	94	4180	97	3440	98	3210	99	2990	100	2790	107	117	-5	93	4030	96	3320	97	3100	98	2890	99	2690	106	116
0	94	4270	97	3510	98	3280	99	3060	100	2850	107	117	0	93	4120	96	3390	97	3170	98	2950	99	2750	106	116
5	94	4380	98	3610	98	3370	99	3150	100	2930	107	117	5	93	4220	96	3480	97	3250	98	3040	99	2830	106	116
10	94	4510	98	3720	99	3480	100	3250	100	3030	107	117	10	93	4350	97	3590	98	3360	98	3130	99	2920	105	116
15	95	4740	98	3910	99	3660	100	3420	101	3180	107	116	15	94	4570	97	3770	98	3530	99	3290	100	3070	105	115
20	96	4990	99	4120	100	3850	101	3600	102	3350	106	116	20	95	4810	98	3970	99	3710	100	3470	100	3230	105	115
25	97	5280	100	4360	101	4070	101	3810	102	3550	106	116	25	96	5080	99	4200	99	3920	100	3660	101	3420	105	115
30	98	5590	100	4610	101	4320	102	4030	103	3760	106	116	30	97	5390	99	4440	100	4160	101	3880	102	3620	105	115
35	98	5940	101	4900	102	4580	103	4280	103	3990	106	116	35	97	5720	100	4720	101	4410	102	4120	102	3840	105	115
40	99	6330	102	5220	103	4880	103	4560	104	4260	106	116	40	98	6090	101	5020	102	4700	102	4390	103	4090	105	115
45	100	6760	103	5570	103	5210	104	4870	105	4540	106	116	45	99	6490	102	5350	102	5010	103	4680	104	4360	105	115
47	100	6940	103	5720	104	5350	104	5000	105	4670	106	116	48	100	6760	102	5570	103	5210	103	4870	104	4540	105	115
48	101	7040	103	5800	104	5420	104	5070	105	4730	106	116													

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																					
	10 KTS		20 KTS		30 KTS		VR	V2	10 KTS		20 KTS			30 KTS		VR	V2																						
	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST		V1	DIST			V1	DIST																				
	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT		KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT																
-30	92	3490	95	2850	96	2660	97	2470	98	2290	104	114	-30	90	3300	93	2690	94	2510	95	2330	96	2160	102	113														
-25	92	3560	95	2910	96	2710	97	2520	98	2340	104	114	-25	90	3360	93	2750	94	2560	95	2380	96	2210	102	113														
-20	92	3620	95	2960	96	2760	97	2570	98	2390	104	114	-20	90	3420	93	2800	94	2610	95	2430	96	2250	102	113														
-15	92	3690	95	3020	96	2820	97	2620	98	2440	104	114	-15	90	3480	93	2860	94	2660	95	2480	96	2300	102	113														
-10	91	3750	95	3080	96	2870	97	2670	97	2490	104	114	-10	90	3540	93	2910	94	2710	95	2530	96	2350	102	113														
-5	91	3810	95	3130	96	2930	96	2730	97	2540	104	114	-5	89	3600	93	2960	94	2760	95	2580	95	2390	102	113														
0	91	3890	94	3200	95	2990	96	2790	97	2590	104	114	0	89	3670	93	3020	94	2820	94	2630	95	2450	102	113														
5	91	3980	95	3280	95	3060	96	2860	97	2660	104	114	5	90	3760	93	3100	94	2890	95	2700	95	2510	102	113														
10	91	4100	95	3380	96	3160	97	2940	97	2740	104	114	10	90	3870	93	3180	94	2970	95	2770	96	2580	102	112														
15	92	4300	95	3550	96	3320	97	3090	98	2880	104	114	15	90	4040	93	3330	94	3110	95	2900	96	2700	102	112														
20	93	4520	96	3730	97	3490	98	3260	99	3030	104	114	20	91	4250	94	3500	95	3270	96	3050	97	2840	102	112														
25	94	4770	97	3940	98	3680	98	3440	99	3210	104	114	25	92	4480	95	3690	96	3450	96	3220	97	3000	102	112														
30	95	5050	97	4170	98	3900	99	3640	100	3390	104	114	30	93	4740	96	3910	96	3650	97	3410	98	3180	102	112														
35	96	5360	98	4420	99	4130	100	3860	100	3600	104	114	35	94	5020	96	4140	97	3870	98	3610	99	3370	102	112														
40	96	5700	99	4700	100	4400	100	4110	101	3830	104	114	40	95	5330	97	4400	98	4110	98	3840	99	3580	102	112														
45	97	6080	100	5010	100	4690	101	4380	102	4080	104	114	45	96	5680	98	4690	98	4380	99	4090	100	3810	102	112														
48	98	6320	100	5210	101	4880	101	4550	102	4250	104	114	48	96	5910	98	4870	99	4550	99	4260	100	3970	102	112														

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS		V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST		10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS								
	V1	FT	V1	FT	V1	V1	V1	V1		FT	V1	FT	V1	V1	V1	V1	FT		V1	FT	V1	V1	V1								
	KIAS	FT	KIAS	FT	KIAS	KIAS	KIAS	KIAS		FT	KIAS	FT	KIAS	KIAS	KIAS	KIAS	FT		KIAS	FT	KIAS	KIAS	KIAS								
-30	89	3160	91	2540	92	2370	93	2200	94	2040	100	112	-30	89	3120	89	2400	90	2230	91	2070	92	1920	98	110						
-25	89	3220	91	2600	92	2420	93	2250	94	2080	100	112	-25	89	3180	89	2450	90	2280	91	2110	92	1960	98	110						
-20	89	3280	91	2650	92	2470	93	2290	94	2130	100	112	-20	89	3240	89	2490	90	2320	91	2160	92	2000	98	110						
-15	89	3340	91	2700	92	2510	93	2340	94	2170	100	112	-15	89	3300	89	2540	90	2370	91	2200	92	2040	98	110						
-10	89	3400	91	2740	92	2560	93	2380	94	2210	100	112	-10	89	3360	89	2590	90	2410	91	2240	92	2080	98	110						
-5	89	3460	91	2790	92	2610	93	2430	93	2260	100	112	-5	89	3420	89	2630	90	2450	91	2280	92	2120	98	110						
0	88	3520	91	2850	92	2660	93	2480	93	2300	100	112	0	89	3470	89	2680	90	2510	91	2330	92	2170	98	110						
5	88	3550	91	2920	92	2730	93	2540	93	2360	100	111	5	88	3510	89	2750	90	2570	91	2390	92	2220	98	110						
10	88	3650	91	3000	92	2810	93	2620	94	2430	100	111	10	87	3520	89	2830	90	2640	91	2460	92	2290	98	110						
15	88	3810	91	3130	92	2930	93	2730	94	2540	100	111	15	87	3580	89	2950	90	2760	91	2570	92	2390	98	109						
20	89	3980	92	3280	93	3070	94	2860	95	2660	100	110	20	87	3740	90	3080	91	2880	92	2680	92	2500	98	109						
25	90	4200	93	3460	94	3230	94	3020	95	2810	100	110	25	88	3930	91	3240	92	3030	92	2820	93	2630	98	109						
30	91	4440	94	3660	94	3420	95	3190	96	2970	100	110	30	89	4150	91	3420	92	3200	93	2980	94	2770	98	109						
35	92	4700	94	3870	95	3620	96	3380	97	3150	100	110	35	90	4390	92	3620	93	3380	94	3160	94	2940	98	109						
40	93	4990	95	4110	96	3840	96	3590	97	3340	100	110	40	91	4660	93	3840	94	3590	94	3350	95	3120	98	108						
45	94	5310	96	4370	97	4090	97	3820	98	3560	100	110	45	92	4950	94	4080	94	3810	95	3560	96	3320	98	108						
48	94	5510	96	4570	97	4250	98	3970	98	3700	100	110	48	92	5140	94	4240	95	3960	96	3700	96	3440	98	108						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT												
-30	89	3090	89	2360	89	2150	89	1960	90	1800	97	109	-30	90	3060	90	2350	90	2140	90	1940	90	1760	95	108														
-25	89	3150	89	2410	89	2200	89	2000	90	1840	97	109	-25	90	3110	90	2390	90	2180	90	1980	90	1800	95	108														
-20	89	3200	89	2460	89	2240	89	2040	90	1880	97	109	-20	90	3170	90	2440	90	2230	90	2020	90	1840	95	108														
-15	89	3260	89	2510	89	2290	89	2080	90	1920	97	109	-15	89	3230	89	2490	89	2270	89	2070	89	1880	95	108														
-10	89	3320	89	2560	89	2330	89	2120	90	1950	97	109	-10	89	3290	89	2530	89	2310	89	2110	89	1920	95	108														
-5	89	3380	89	2600	89	2380	89	2160	90	1990	97	109	-5	89	3350	89	2580	89	2360	89	2150	89	1950	95	108														
0	89	3430	89	2640	89	2410	89	2200	90	2040	97	109	0	89	3390	89	2620	89	2390	89	2180	89	1990	95	108														
5	88	3460	88	2670	88	2440	89	2250	90	2090	97	109	5	89	3430	89	2640	89	2420	89	2210	89	2010	95	107														
10	87	3480	87	2680	88	2480	89	2310	90	2150	97	109	10	88	3440	88	2660	88	2430	88	2220	88	2020	95	107														
15	86	3430	87	2770	88	2590	89	2410	90	2240	96	108	15	86	3390	86	2620	86	2430	87	2260	88	2100	95	107														
20	85	3520	88	2900	89	2700	90	2520	90	2340	96	108	20	84	3340	86	2720	87	2530	88	2360	88	2190	94	106														
25	86	3680	89	3030	89	2830	90	2640	91	2460	96	107	25	84	3460	87	2840	87	2650	88	2470	89	2300	94	106														
30	87	3880	89	3190	90	2980	91	2780	92	2590	96	107	30	85	3620	87	2980	88	2790	89	2600	89	2410	94	105														
35	88	4100	90	3380	91	3150	92	2940	92	2740	96	107	35	85	3820	88	3150	89	2940	89	2740	90	2540	94	105														
40	89	4340	91	3580	92	3340	92	3120	93	2900	96	107	40	86	4050	89	3330	89	3110	90	2900	91	2700	94	105														
45	89	4610	92	3800	92	3550	93	3310	94	3080	96	107	45	87	4300	90	3540	90	3300	91	3080	92	2860	94	105														
48	90	4790	92	3950	93	3690	93	3440	94	3200	96	107	48	88	4460	90	3670	91	3430	91	3200	92	2970	94	105														

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS							
						10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS FT	VR V2 KIAS	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	VR V2 KIAS			
-30	90	3030	90	2330	90	2130	90	1930	90	1750	95	108	-30	90	3010	90	2320	90	2120	90	1930	90	1750	96	109
-25	90	3090	90	2380	90	2170	90	1970	90	1790	95	108	-25	90	3060	90	2360	90	2160	90	1960	90	1780	96	109
-20	90	3140	90	2420	90	2210	90	2010	90	1830	95	108	-20	90	3120	90	2410	90	2200	90	2000	90	1820	96	109
-15	90	3200	90	2470	90	2260	90	2050	90	1870	95	108	-15	90	3170	90	2450	90	2240	90	2050	90	1860	96	109
-10	90	3260	90	2520	90	2300	90	2100	90	1910	95	108	-10	90	3230	90	2500	90	2290	90	2090	90	1900	96	109
-5	90	3310	90	2560	90	2340	90	2140	90	1940	95	108	-5	90	3280	90	2550	90	2330	90	2130	90	1940	96	109
0	89	3360	89	2600	89	2380	89	2170	89	1970	95	108	0	90	3330	90	2580	90	2360	90	2160	90	1970	95	109
5	89	3390	89	2620	89	2400	89	2190	89	1990	94	107	5	89	3360	89	2600	89	2390	89	2180	89	1980	95	108
10	88	3400	88	2630	88	2410	88	2200	88	2000	93	106	10	88	3370	88	2610	88	2390	88	2190	88	1990	94	107
15	86	3350	86	2590	86	2370	86	2160	86	1970	93	105	15	86	3320	86	2570	86	2350	86	2150	86	1960	91	105
20	84	3300	84	2550	85	2370	86	2210	86	2050	93	105	20	84	3260	84	2530	84	2310	84	2110	84	1920	91	103
25	82	3250	84	2660	85	2480	86	2310	87	2150	92	104	25	82	3210	82	2490	83	2320	84	2160	85	2000	91	103
30	82	3390	85	2790	86	2600	87	2420	87	2250	92	104	30	80	3170	83	2600	84	2430	84	2260	85	2100	90	102
35	83	3560	86	2930	86	2740	87	2550	88	2370	92	103	35	81	3330	83	2730	84	2550	85	2370	86	2200	90	102
40	84	3770	86	3100	87	2890	88	2690	88	2500	92	103	40	82	3500	84	2880	85	2680	85	2500	86	2320	90	101
45	85	3990	87	3280	88	3070	89	2860	89	2650	92	103	45	83	3710	85	3040	86	2840	86	2650	87	2460	90	101
48	86	4140	88	3410	88	3180	89	2960	90	2750	92	103	48	83	3840	85	3160	86	2940	87	2740	87	2550	90	101

WEIGHT = 11500 LBS											VENR = 160 KIAS											WEIGHT = 11000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																				
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																						
					V1 DIST KIAS FT	V2 DIST KIAS FT	V1 DIST KIAS FT	V2 DIST KIAS FT	V1 DIST KIAS FT	V2 DIST KIAS FT							V1 DIST KIAS FT	V2 DIST KIAS FT	V1 DIST KIAS FT	V2 DIST KIAS FT	V1 DIST KIAS FT	V2 DIST KIAS FT																					
-30	91	2990	91	2310	91	2110	91	1920	91	1750	96	110	-30	91	2970	91	2300	91	2100	91	1920	91	1750	97	112																		
-25	91	3040	91	2350	91	2150	91	1960	91	1780	96	110	-25	91	3020	91	2340	91	2140	91	1960	91	1780	97	111																		
-20	91	3090	91	2400	91	2190	91	2000	91	1820	96	110	-20	91	3080	91	2390	91	2190	91	2000	91	1820	97	111																		
-15	90	3150	90	2440	90	2230	90	2040	90	1860	96	110	-15	91	3130	91	2430	91	2230	91	2040	91	1850	97	111																		
-10	90	3200	90	2490	90	2280	90	2080	90	1890	96	110	-10	91	3180	91	2480	91	2270	91	2080	91	1890	97	111																		
-5	90	3260	90	2530	90	2320	90	2120	90	1930	96	110	-5	91	3240	91	2520	91	2310	91	2120	91	1930	97	111																		
0	90	3300	90	2570	90	2350	90	2150	90	1960	96	110	0	90	3280	90	2560	90	2350	90	2150	90	1960	97	111																		
5	89	3330	89	2590	89	2370	89	2170	89	1980	95	109	5	90	3310	90	2580	90	2360	90	2160	90	1970	96	110																		
10	89	3340	89	2600	89	2380	89	2180	89	1980	94	108	10	89	3310	89	2590	89	2370	89	2170	89	1980	95	109																		
15	87	3280	87	2550	87	2340	87	2140	87	1950	92	106	15	87	3260	87	2540	87	2330	87	2130	87	1940	93	107																		
20	85	3230	85	2510	85	2290	85	2090	85	1910	90	103	20	85	3200	85	2490	85	2280	85	2080	85	1900	90	104																		
25	82	3170	82	2460	82	2250	82	2050	82	1860	88	101	25	83	3130	83	2430	83	2230	83	2030	83	1850	88	101																		
30	80	3110	81	2420	81	2260	82	2100	83	1950	88	101	30	81	3070	81	2380	81	2180	81	1980	81	1810	86	99																		
35	79	3100	81	2540	82	2370	83	2200	83	2040	88	100	35	78	3010	79	2360	80	2200	80	2040	81	1890	86	99																		
40	79	3260	82	2670	83	2490	83	2320	84	2150	88	100	40	77	3030	79	2480	80	2310	81	2150	82	1990	86	98																		
45	80	3440	82	2820	83	2630	84	2440	84	2270	88	99	45	78	3190	80	2610	81	2430	81	2260	82	2090	86	97																		
48	81	3560	83	2920	84	2720	84	2530	85	2350	88	99	48	78	3290	80	2690	81	2510	82	2330	82	2160	86	97																		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS								
VENR = 160 KIAS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			
	10 KTS		10 KTS		10 KTS	20 KTS	30 KTS	10 KTS			10 KTS		10 KTS	20 KTS	30 KTS		
	V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST		V1 DIST	V1 DIST	V1 DIST		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-30	95	3920	98	3220	99	3000	100	2790	-30	93	3790	97	3110	98	2900	99	2500
-25	94	4000	98	3280	99	3060	100	2860	-25	93	3860	97	3170	98	2960	99	2560
-20	94	4080	97	3350	98	3130	99	2910	-20	93	3940	96	3230	97	3020	98	2610
-15	94	4150	97	3410	98	3190	99	2970	-15	93	4010	96	3300	97	3080	98	2670
-10	94	4230	97	3480	98	3250	99	3040	-10	93	4080	96	3360	97	3140	98	2730
-5	94	4300	97	3550	98	3320	99	3100	-5	93	4150	96	3420	97	3200	98	2780
0	94	4440	97	3660	98	3430	99	3200	0	93	4280	96	3530	97	3300	98	2870
5	94	4590	98	3790	98	3550	99	3310	5	93	4430	96	3660	97	3420	98	2980
10	95	4800	98	3970	99	3710	100	3470	10	94	4630	97	3830	98	3580	99	3340
15	96	5070	99	4190	100	3920	101	3660	15	95	4880	98	4030	99	3780	99	3530
20	96	5360	99	4430	100	4140	101	3870	20	95	5160	98	4260	99	3990	100	3730
25	97	5670	100	4680	101	4380	102	4100	25	96	5460	99	4510	100	4220	101	3940
30	98	6020	101	4970	102	4650	103	4350	30	97	5790	100	4780	101	4480	102	3900
35	99	6400	102	5280	102	4940	103	4620	35	98	6150	101	5080	101	4750	102	4440
40	100	6820	102	5620	103	5260	104	4920	40	99	6550	101	5410	102	5060	103	4730
43	100	7090	103	5850	103	5470	104	5120	45	99	7000	102	5770	103	5400	103	5050
45	100	7360	103	6010	104	5620	104	5250	46	100	7090	102	5850	103	5470	104	5120

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS																	
VENR = 160 KIAS								VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				
	10 KTS		10 KTS		20 KTS	30 KTS	10 KTS			10 KTS		20 KTS	30 KTS	10 KTS			10 KTS		20 KTS	30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1		DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			
-30	92	3590	95	2940	96	2740	97 2550	98 2370	104 114	-30	90	3390	93 2780	94 2590	95 2410	96 2240	102 113	-30	90	3390	93 2780	94 2590	95 2410	96 2240	102 113
-25	91	3660	95	3000	96	2800	97 2610	97 2420	104 114	-25	90	3460	93 2840	94 2640	95 2460	96 2280	102 113	-25	90	3460	93 2840	94 2640	95 2460	96 2280	102 113
-20	91	3730	95	3060	96	2850	97 2660	97 2470	104 114	-20	90	3520	93 2890	94 2700	95 2510	95 2330	102 113	-20	90	3520	93 2890	94 2700	95 2510	95 2330	102 113
-15	91	3790	94	3120	95	2910	96 2710	97 2520	104 114	-15	89	3580	93 2940	94 2750	94 2560	95 2380	102 113	-15	89	3580	93 2940	94 2750	94 2560	95 2380	102 113
-10	91	3860	94	3180	95	2970	96 2770	97 2570	104 114	-10	89	3650	92 3000	93 2800	94 2610	95 2430	102 113	-10	89	3650	92 3000	93 2800	94 2610	95 2430	102 113
-5	91	3930	94	3240	95	3020	96 2820	97 2630	104 114	-5	89	3710	92 3060	93 2860	94 2660	95 2480	102 113	-5	89	3710	92 3060	93 2860	94 2660	95 2480	102 113
0	91	4040	94	3330	95	3110	96 2910	97 2710	104 114	0	89	3810	92 3140	93 2940	94 2740	95 2560	102 113	0	89	3810	92 3140	93 2940	94 2740	95 2560	102 113
5	91	4170	94	3440	95	3220	96 3000	97 2800	104 114	5	89	3940	93 3240	94 3030	95 2830	95 2640	102 113	5	89	3940	93 3240	94 3030	95 2830	95 2640	102 113
10	92	4350	95	3600	96	3360	97 3140	98 2930	104 114	10	90	4090	93 3380	94 3160	95 2950	96 2750	102 112	10	90	4090	93 3380	94 3160	95 2950	96 2750	102 112
15	93	4590	96	3790	97	3550	98 3310	98 3090	104 114	15	91	4310	94 3560	95 3330	96 3110	96 2890	102 112	15	91	4310	94 3560	95 3330	96 3110	96 2890	102 112
20	94	4840	96	4000	97	3740	98 3500	99 3260	104 114	20	92	4540	95 3750	95 3510	96 3280	97 3050	102 112	20	92	4540	95 3750	95 3510	96 3280	97 3050	102 112
25	94	5120	97	4230	98	3960	99 3700	100 3450	104 114	25	93	4800	95 3960	96 3710	97 3460	98 3230	102 112	25	93	4800	95 3960	96 3710	97 3460	98 3230	102 112
30	95	5430	98	4480	99	4190	99 3920	100 3660	104 114	30	93	5080	96 4200	97 3930	98 3670	98 3420	102 112	30	93	5080	96 4200	97 3930	98 3670	98 3420	102 112
35	96	5760	99	4750	99	4450	100 4160	101 3880	104 114	35	94	5390	97 4450	97 4160	98 3890	99 3630	102 112	35	94	5390	97 4450	97 4160	98 3890	99 3630	102 112
40	97	6130	99	5060	100	4730	101 4430	101 4130	104 114	40	95	5730	97 4730	98 4420	99 4130	99 3860	102 112	40	95	5730	97 4730	98 4420	99 4130	99 3860	102 112
45	98	6530	100	5390	101	5050	101 4720	102 4400	104 114	45	96	6100	98 5040	99 4710	99 4410	100 4110	102 112	45	96	6100	98 5040	99 4710	99 4410	100 4110	102 112
46	98	6620	100	5470	101	5120	102 4780	102 4460	104 114	46	96	6180	98 5100	99 4780	100 4460	100 4170	102 112	46	96	6180	98 5100	99 4780	100 4460	100 4170	102 112

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS														
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						
	10 KTS				10 KTS		20 KTS			30 KTS		10 KTS				10 KTS			20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	VR	V2			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2				
-30	89	3290	91	2620	92	2440	93	2270	94	2110	100	112	-30	89	3250	89	2490	90	2300	91	2140	92	1980	98	110	-30	89	3250	89	2490	90	2300	91	2140	92	1980	98	110
-25	89	3350	91	2680	92	2490	93	2320	94	2150	100	112	-25	89	3310	89	2540	90	2350	91	2180	92	2030	98	110	-25	89	3310	89	2540	90	2350	91	2180	92	2030	98	110
-20	89	3410	91	2730	92	2540	93	2370	94	2200	100	112	-20	89	3370	89	2590	90	2390	91	2230	92	2070	98	110	-20	89	3370	89	2590	90	2390	91	2230	92	2070	98	110
-15	89	3480	91	2780	92	2590	93	2420	93	2240	100	112	-15	89	3440	89	2640	90	2440	91	2270	91	2110	98	110	-15	89	3440	89	2640	90	2440	91	2270	91	2110	98	110
-10	89	3540	91	2830	91	2640	92	2460	93	2290	100	112	-10	89	3500	89	2690	90	2490	90	2320	91	2150	98	110	-10	89	3500	89	2690	90	2490	90	2320	91	2150	98	110
-5	89	3610	90	2880	91	2690	92	2510	93	2330	100	112	-5	89	3560	89	2740	89	2530	90	2360	91	2200	98	110	-5	89	3560	89	2740	89	2530	90	2360	91	2200	98	110
0	88	3630	91	2970	92	2770	92	2580	93	2410	100	111	0	88	3580	89	2790	90	2610	90	2430	91	2260	98	110	0	88	3580	89	2790	90	2610	90	2430	91	2260	98	110
5	88	3710	91	3060	92	2860	93	2670	93	2480	100	111	5	87	3590	89	2880	90	2690	91	2510	91	2340	98	110	5	87	3590	89	2880	90	2690	91	2510	91	2340	98	110
10	88	3860	91	3180	92	2970	93	2770	94	2580	100	111	10	86	3630	89	2990	90	2800	91	2610	92	2430	98	109	10	86	3630	89	2990	90	2800	91	2610	92	2430	98	109
15	89	4040	92	3330	93	3120	94	2910	94	2710	100	110	15	87	3800	90	3130	91	2930	92	2730	92	2540	98	109	15	87	3800	90	3130	91	2930	92	2730	92	2540	98	109
20	90	4260	93	3510	93	3290	94	3070	95	2860	100	110	20	88	3990	90	3290	91	3070	92	2870	93	2670	98	109	20	88	3990	90	3290	91	3070	92	2870	93	2670	98	109
25	91	4490	93	3710	94	3470	95	3240	96	3020	100	110	25	89	4200	91	3470	92	3240	93	3030	94	2820	98	109	25	89	4200	91	3470	92	3240	93	3030	94	2820	98	109
30	91	4750	94	3920	95	3670	96	3430	96	3200	100	110	30	89	4440	92	3670	93	3430	93	3200	94	2980	98	109	30	89	4440	92	3670	93	3430	93	3200	94	2980	98	109
35	92	5030	95	4160	95	3890	96	3630	97	3390	100	110	35	90	4700	93	3880	93	3630	94	3390	95	3160	98	108	35	90	4700	93	3880	93	3630	94	3390	95	3160	98	108
40	93	5350	95	4410	96	4130	97	3860	97	3600	100	110	40	91	4990	93	4120	94	3850	95	3600	95	3350	98	108	40	91	4990	93	4120	94	3850	95	3600	95	3350	98	108
45	94	5690	96	4700	97	4400	97	4110	98	3830	100	110	45	92	5310	94	4380	95	4100	95	3830	96	3570	98	108	45	92	5310	94	4380	95	4100	95	3830	96	3570	98	108
46	94	5770	96	4760	97	4460	98	4160	98	3880	100	110	46	92	5380	94	4440	95	4150	96	3880	96	3610	98	108	46	92	5380	94	4440	95	4150	96	3880	96	3610	98	108

Figure 4-18 (Sheet 9 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS																	
VENR = 160 KIAS										VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR	V2		
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT
-30	90	3210	90	2470	90	2250	90	2040	90	1860	97	109	-30	90	3180	90	2450	90	2230	90	2030	90	1840	95	108		
-25	90	3270	90	2510	90	2290	90	2090	90	1900	97	109	-25	90	3240	90	2490	90	2280	90	2070	90	1880	95	108		
-20	89	3340	89	2570	89	2340	89	2130	90	1940	97	109	-20	90	3300	90	2540	90	2320	90	2120	90	1920	95	108		
-15	89	3400	89	2620	89	2390	89	2180	89	1980	97	109	-15	90	3360	90	2600	90	2370	90	2160	90	1970	95	108		
-10	89	3460	89	2670	89	2430	89	2220	89	2020	97	109	-10	90	3420	90	2640	90	2420	90	2200	90	2000	95	108		
-5	89	3520	89	2710	89	2480	89	2260	89	2060	97	109	-5	89	3480	89	2690	89	2460	89	2250	89	2040	95	108		
0	88	3540	88	2730	88	2490	89	2280	89	2120	97	109	0	89	3500	89	2700	89	2470	89	2260	89	2050	95	107		
5	87	3550	87	2730	88	2530	89	2360	90	2190	97	109	5	88	3500	88	2710	88	2480	88	2260	88	2060	95	107		
10	86	3520	87	2810	88	2630	89	2450	90	2280	96	108	10	86	3470	86	2680	86	2460	87	2290	88	2130	95	107		
15	85	3570	88	2940	89	2750	90	2560	90	2380	96	108	15	84	3420	86	2760	87	2580	87	2400	88	2230	95	106		
20	86	3740	88	3080	89	2880	90	2690	91	2500	96	107	20	84	3510	86	2890	87	2700	88	2510	89	2340	94	106		
25	86	3930	89	3240	90	3030	91	2820	91	2630	96	107	25	84	3670	87	3020	88	2830	88	2640	89	2450	94	105		
30	87	4150	90	3420	91	3200	91	2980	92	2780	96	107	30	85	3870	88	3190	88	2980	89	2780	90	2580	94	105		
35	88	4390	91	3620	91	3380	92	3160	93	2940	96	107	35	86	4090	88	3370	89	3150	90	2940	91	2730	94	105		
40	89	4650	91	3840	92	3590	93	3350	93	3120	96	107	40	87	4330	89	3570	90	3330	91	3110	91	2900	94	105		
45	90	4940	92	4080	93	3810	93	3560	94	3320	96	107	45	88	4600	90	3790	91	3540	91	3300	92	3080	94	105		
46	90	5000	92	4130	93	3860	94	3600	94	3360	96	107	46	88	4650	90	3840	91	3590	91	3350	92	3120	94	105		

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT											
-30	90	3150	90	2430	90	2220	90	2020	90	1840	96	109	-30	91	3130	91	2420	91	2210	91	2010	91	1830	96	110						
-25	90	3210	90	2480	90	2260	90	2060	90	1870	96	109	-25	90	3180	90	2460	90	2250	90	2050	90	1870	96	110						
-20	90	3270	90	2530	90	2310	90	2110	90	1910	96	109	-20	90	3240	90	2510	90	2300	90	2100	90	1910	96	110						
-15	90	3330	90	2580	90	2360	90	2150	90	1960	96	109	-15	90	3300	90	2560	90	2340	90	2140	90	1950	96	110						
-10	90	3390	90	2620	90	2400	90	2190	90	1990	95	109	-10	90	3360	90	2610	90	2390	90	2180	90	1990	96	110						
-5	90	3450	90	2670	90	2440	90	2230	90	2030	95	109	-5	90	3410	90	2650	90	2430	90	2220	90	2020	96	110						
0	89	3460	89	2680	89	2450	89	2240	89	2040	94	108	0	89	3430	89	2660	89	2440	89	2230	89	2030	95	109						
5	88	3460	88	2680	88	2460	88	2240	88	2040	93	106	5	88	3430	88	2660	88	2440	88	2230	88	2030	94	107						
10	86	3430	86	2660	86	2430	86	2220	86	2020	93	105	10	87	3390	87	2640	87	2410	87	2200	87	2010	92	105						
15	84	3370	84	2610	85	2410	85	2240	86	2090	93	105	15	84	3340	84	2590	84	2370	84	2160	84	1970	91	103						
20	82	3320	84	2700	85	2520	86	2350	87	2180	92	104	20	82	3280	82	2540	83	2350	84	2190	84	2030	91	103						
25	82	3440	85	2830	86	2640	86	2460	87	2290	92	104	25	80	3220	83	2640	83	2470	84	2300	85	2130	90	102						
30	83	3610	85	2970	86	2770	87	2580	88	2400	92	103	30	81	3370	83	2770	84	2580	85	2410	85	2240	90	102						
35	84	3800	86	3130	87	2920	88	2720	88	2540	92	103	35	81	3540	84	2910	85	2720	85	2530	86	2350	90	101						
40	85	4020	87	3310	88	3090	88	2880	89	2680	92	103	40	82	3730	85	3070	85	2870	86	2670	87	2480	90	101						
45	86	4270	88	3520	88	3290	89	3060	90	2850	92	103	45	83	3960	85	3260	86	3040	87	2830	87	2630	90	101						
46	86	4320	88	3560	89	3330	89	3100	90	2890	92	103	46	84	4010	86	3300	86	3080	87	2870	87	2670	90	101						

WEIGHT = 11500 LBS								VENR = 160 KIAS				WEIGHT = 11000 LBS								VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS				
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS						
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					
-30	91 3100	91 2410	91 2200	91 2010	91 1830	97 111	-30	91 3090	91 2400	91 2200	91 2000	91 1830	98 112										
-25	91 3160	91 2450	91 2240	91 2050	91 1860	97 111	-25	91 3140	91 2440	91 2240	91 2040	91 1860	98 112										
-20	91 3220	91 2500	91 2290	91 2090	91 1900	97 111	-20	91 3200	91 2490	91 2280	91 2090	91 1900	98 112										
-15	91 3280	91 2550	91 2330	91 2130	91 1940	97 111	-15	91 3260	91 2540	91 2330	91 2130	91 1940	98 112										
-10	91 3330	91 2590	91 2380	91 2170	91 1980	97 111	-10	91 3310	91 2580	91 2370	91 2170	91 1980	98 112										
-5	90 3390	90 2640	90 2420	90 2210	90 2020	97 111	-5	91 3360	91 2630	91 2410	91 2210	91 2020	98 112										
0	90 3400	90 2650	90 2430	90 2220	90 2030	96 110	0	90 3370	90 2630	90 2420	90 2210	90 2020	97 111										
5	89 3400	89 2650	89 2430	89 2220	89 2020	95 108	5	89 3370	89 2630	89 2420	89 2210	89 2020	95 109										
10	87 3360	87 2620	87 2400	87 2190	87 2000	92 106	10	87 3330	87 2600	87 2380	87 2180	87 1990	93 107										
15	85 3300	85 2560	85 2350	85 2150	85 1950	90 103	15	85 3270	85 2550	85 2330	85 2130	85 1950	90 104										
20	83 3240	83 2510	83 2300	83 2100	83 1910	88 101	20	83 3200	83 2490	83 2280	83 2090	83 1900	88 101										
25	80 3180	80 2460	81 2290	82 2130	83 1980	88 101	25	81 3140	81 2440	81 2230	81 2040	81 1850	86 99										
30	79 3140	81 2580	82 2400	82 2240	83 2080	88 100	30	79 3080	79 2390	79 2230	80 2070	81 1920	86 98										
35	79 3290	82 2700	82 2520	83 2350	84 2180	88 100	35	77 3060	79 2510	80 2340	81 2170	81 2020	86 98										
40	80 3460	82 2840	83 2650	84 2470	84 2290	88 99	40	78 3210	80 2640	80 2460	81 2280	82 2120	86 98										
45	81 3660	83 3010	84 2810	84 2620	85 2430	88 99	45	78 3380	80 2770	81 2590	82 2400	82 2230	86 97										
46	81 3710	83 3050	84 2840	84 2650	85 2460	88 99	46	78 3420	81 2810	81 2620	82 2430	82 2260	86 97										

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S								VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S								VR V2												
	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	10 KTS	V1 DIST			WIND	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT															
-35	94	3940	97	3230	98	3020	99	2810	100	2610	107	117	-35	93	3810	96	3130	97	2920	98	2720	99	2520	106	116														
-30	94	4020	97	3300	98	3090	99	2880	100	2670	107	117	-30	93	3890	96	3190	97	2980	98	2780	99	2580	106	116														
-25	94	4100	97	3380	98	3150	99	2940	100	2740	107	117	-25	93	3970	96	3260	97	3050	98	2840	99	2640	106	116														
-20	94	4190	97	3450	98	3220	99	3010	100	2800	107	117	-20	93	4050	96	3330	97	3110	98	2900	99	2700	106	116														
-15	94	4290	97	3540	98	3310	99	3090	100	2870	107	117	-15	93	4140	96	3410	97	3190	98	2980	99	2770	106	116														
-10	94	4410	97	3640	98	3410	99	3180	100	2960	107	117	-10	93	4260	96	3510	97	3280	98	3070	99	2860	106	116														
-5	94	4550	97	3760	98	3510	99	3280	100	3060	107	117	-5	93	4390	96	3620	97	3390	98	3160	99	2950	106	116														
0	94	4720	98	3900	99	3650	99	3410	100	3180	107	117	0	93	4550	96	3760	97	3520	98	3290	99	3070	105	116														
5	95	4900	98	4050	99	3790	100	3540	101	3310	107	116	5	94	4720	97	3910	98	3660	99	3420	99	3190	105	116														
10	95	5160	99	4270	99	4000	100	3740	101	3490	106	116	10	94	4970	97	4110	98	3850	99	3600	100	3360	105	115														
15	96	5450	99	4500	100	4220	101	3940	102	3680	106	116	15	95	5240	98	4340	99	4060	100	3800	101	3540	105	115														
20	97	5760	100	4760	101	4460	102	4170	102	3890	106	116	20	96	5540	99	4580	100	4290	100	4010	101	3750	105	115														
25	98	6100	101	5050	101	4720	102	4420	103	4120	106	116	25	97	5870	99	4850	100	4540	101	4250	102	3970	105	115														
30	98	6480	101	5350	102	5020	103	4690	103	4380	106	116	30	97	6230	100	5150	101	4820	102	4510	102	4210	105	115														
35	99	6890	102	5700	103	5330	103	4980	104	4660	106	116	35	98	6630	101	5470	102	5120	102	4790	103	4480	105	115														
40	99	7530	103	6080	103	5690	104	5320	105	4960	106	116	40	99	7060	102	5830	102	5460	103	5110	104	4770	105	115														
41	99	7680	103	6160	103	5760	104	5390	105	5030	106	116	41	99	7160	102	5910	102	5530	103	5170	104	4830	105	115														
													44	99	7520	102	6150	103	5760	103	5390	104	5030	105	115														

WEIGHT = 15500 LBS										VENR = 160 KIAS				WEIGHT = 15000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS			
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS					
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST				
-35	91	3610	94	2960	95	2760	96	2570	97	2390	104	114	-35	90	3410	93	2800	94	2610	95	2430	95	2250	102	113		
-30	91	3680	94	3020	95	2820	96	2630	97	2440	104	114	-30	89	3480	93	2860	93	2670	94	2480	95	2310	102	113		
-25	91	3750	94	3080	95	2880	96	2680	97	2500	104	114	-25	89	3550	92	2920	93	2720	94	2540	95	2360	102	113		
-20	91	3830	94	3150	95	2940	96	2740	97	2550	104	114	-20	89	3620	92	2980	93	2780	94	2590	95	2410	102	113		
-15	91	3920	94	3220	95	3010	96	2810	97	2620	104	114	-15	89	3700	92	3050	93	2850	94	2660	95	2470	102	113		
-10	91	4020	94	3310	95	3100	96	2890	97	2690	104	114	-10	89	3800	92	3130	93	2930	94	2730	95	2540	102	113		
-5	91	4130	94	3410	95	3190	96	2980	97	2770	104	114	-5	89	3900	92	3220	93	3010	94	2810	95	2620	102	113		
0	91	4280	95	3540	96	3310	96	3090	97	2880	104	114	0	90	4030	93	3330	94	3110	95	2910	95	2710	102	112		
5	92	4440	95	3670	96	3430	97	3210	98	2990	104	114	5	90	4170	93	3450	94	3220	95	3010	96	2810	102	112		
10	93	4670	96	3860	96	3620	97	3380	98	3150	104	114	10	91	4390	94	3620	95	3390	95	3170	96	2950	102	112		
15	93	4920	96	4070	97	3810	98	3560	99	3320	104	114	15	91	4620	94	3820	95	3570	96	3340	97	3110	102	112		
20	94	5200	97	4300	98	4020	99	3760	99	3510	104	114	20	92	4870	95	4030	96	3770	97	3520	97	3290	102	112		
25	95	5500	98	4550	98	4260	99	3980	100	3710	104	114	25	93	5150	96	4260	97	3980	97	3720	98	3470	102	112		
30	96	5830	98	4820	99	4510	100	4220	101	3940	104	114	30	94	5450	96	4510	97	4220	98	3940	99	3680	102	112		
35	97	6190	99	5120	100	4790	100	4480	101	4180	104	114	35	95	5790	97	4790	98	4480	99	4190	99	3910	102	112		
40	97	6590	100	5450	100	5100	101	4770	102	4460	104	114	40	96	6160	98	5090	98	4770	99	4460	100	4160	102	112		
44	98	6950	100	5740	101	5380	102	5030	102	4700	104	114	44	96	6480	98	5360	99	5020	100	4690	100	4380	102	112		

WEIGHT = 14500 LBS										VENR = 160 KIAS				WEIGHT = 14000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS			TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS				
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST									V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			
-35	90	3370	91	2640	92	2460	93	2290	94	2130	100	112		-35	90	3330	90	2560	90	2330	91	2160	92	2000	98	111	
-30	90	3440	91	2690	92	2510	92	2340	93	2170	100	112		-30	90	3400	90	2610	90	2380	91	2200	91	2040	98	111	
-25	89	3500	91	2750	91	2570	92	2390	93	2220	100	112		-25	90	3460	90	2660	90	2420	90	2250	91	2090	98	111	
-20	89	3560	90	2810	91	2620	92	2440	93	2270	100	112		-20	90	3520	90	2710	90	2470	90	2300	91	2140	98	110	
-15	89	3620	90	2870	91	2690	92	2500	93	2330	100	112		-15	89	3570	89	2750	89	2530	90	2350	91	2190	98	110	
-10	88	3650	90	2950	91	2760	92	2570	93	2390	100	112		-10	88	3600	88	2780	89	2600	90	2420	91	2250	98	110	
-5	87	3680	91	3040	91	2840	92	2650	93	2460	100	111		-5	88	3630	89	2860	90	2670	90	2490	91	2320	98	110	
0	88	3800	91	3140	92	2940	93	2740	93	2550	100	111		0	87	3630	89	2950	90	2760	91	2580	92	2400	98	110	
5	88	3930	91	3240	92	3030	93	2830	94	2640	100	111		5	86	3700	89	3050	90	2860	91	2660	92	2480	98	109	
10	89	4110	92	3400	93	3180	93	2970	94	2760	100	110		10	87	3870	90	3190	91	2980	91	2780	92	2590	98	109	
15	90	4330	92	3570	93	3340	94	3120	95	2910	100	110		15	88	4050	90	3340	91	3130	92	2920	93	2720	98	109	
20	90	4560	93	3770	94	3530	95	3290	95	3070	100	110		20	88	4260	91	3520	92	3300	93	3080	93	2870	98	109	
25	91	4810	94	3980	95	3730	95	3480	96	3250	100	110		25	89	4500	92	3720	92	3480	93	3250	94	3030	98	109	
30	92	5090	94	4210	95	3940	96	3680	97	3440	100	110		30	90	4760	92	3930	93	3680	94	3440	95	3200	98	108	
35	93	5400	95	4470	96	4180	97	3910	97	3650	100	110		35	91	5040	93	4170	94	3900	95	3640	95	3400	98	108	
40	94	5740	96	4750	97	4440	97	4150	98	3880	100	110		40	92	5350	94	4420	95	4140	95	3870	96	3610	98	108	
44	94	6050	96	5000	97	4680	98	4370	98	4080	100	110		44	92	5630	94	4650	95	4350	96	4070	96	3800	98	108	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C	TAILWIND		ZERO		HEADWINDS				TEMP DEG C	TAILWIND		ZERO		HEADWINDS											
	10 KTS		WIND		10 KTS		20 KTS			30 KTS		10 KTS		WIND		20 KTS		30 KTS							
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT						
-35	90	3300	90	2530	90	2310	90	2110	90	1910	97	109	-35	91	3270	91	2520	91	2300	91	2090	91	1900	96	109
-30	90	3360	90	2580	90	2360	90	2150	90	1950	97	109	-30	90	3330	90	2560	90	2340	90	2130	90	1940	96	109
-25	90	3420	90	2630	90	2400	90	2190	90	1990	97	109	-25	90	3380	90	2610	90	2390	90	2180	90	1980	96	109
-20	90	3480	90	2680	90	2450	90	2230	90	2030	97	109	-20	90	3440	90	2660	90	2430	90	2220	90	2020	95	108
-15	89	3530	89	2720	89	2490	89	2270	89	2060	97	109	-15	90	3490	90	2700	90	2470	90	2250	90	2050	95	108
-10	89	3560	89	2740	89	2510	89	2290	89	2110	97	109	-10	89	3520	89	2720	89	2490	89	2270	89	2070	95	108
-5	88	3580	88	2760	88	2530	89	2340	89	2170	97	109	-5	88	3540	88	2740	88	2500	88	2270	88	2080	95	107
0	87	3580	87	2770	88	2590	89	2420	90	2250	97	108	0	87	3540	87	2730	87	2500	87	2280	88	2110	95	107
5	86	3580	87	2870	88	2680	89	2500	90	2330	96	108	5	86	3530	86	2730	86	2510	87	2340	88	2180	95	107
10	85	3630	88	3000	89	2800	89	2610	90	2430	96	108	10	84	3480	86	2810	86	2630	87	2450	88	2280	95	106
15	86	3800	88	3130	89	2930	90	2730	91	2550	96	107	15	83	3560	86	2940	87	2750	88	2560	89	2380	94	106
20	86	3980	89	3290	90	3070	90	2870	91	2670	96	107	20	84	3730	87	3070	88	2870	88	2680	89	2500	94	105
25	87	4200	90	3470	90	3240	91	3030	92	2820	96	107	25	85	3920	87	3230	88	3020	89	2820	90	2620	94	105
30	88	4440	90	3660	91	3430	92	3200	92	2980	96	107	30	86	4130	88	3410	89	3190	90	2980	90	2770	94	105
35	89	4700	91	3880	92	3630	92	3390	93	3160	96	107	35	87	4370	89	3610	90	3370	90	3150	91	2930	94	105
40	90	4980	92	4120	92	3850	93	3600	94	3350	96	107	40	87	4630	90	3830	90	3580	91	3340	92	3110	94	105
44	90	5240	92	4330	93	4050	94	3780	94	3530	96	107	44	88	4860	90	4020	91	3760	91	3510	92	3270	94	105

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS							
VENR = 160 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	91 3240	91 2500	91 2280	91 2080	91 1890	96 110	-35	91 3210	91 2480	91 2270	91 2070	91 1890	97 111		
-30	91 3290	91 2550	91 2330	91 2120	91 1930	96 110	-30	91 3270	91 2530	91 2320	91 2110	91 1920	97 111		
-25	91 3350	91 2590	91 2370	91 2160	91 1970	96 110	-25	91 3320	91 2580	91 2360	91 2150	91 1960	97 111		
-20	90 3410	90 2640	90 2420	90 2210	90 2010	96 109	-20	91 3380	91 2620	91 2400	91 2200	91 2000	97 110		
-15	90 3450	90 2680	90 2450	90 2240	90 2040	96 109	-15	90 3420	90 2660	90 2440	90 2230	90 2030	96 110		
-10	89 3480	89 2700	89 2470	89 2260	89 2060	95 108	-10	90 3450	90 2680	90 2450	90 2240	90 2050	96 109		
-5	88 3500	88 2710	88 2480	88 2270	88 2070	94 107	-5	89 3470	89 2690	89 2470	89 2260	89 2060	95 108		
0	87 3500	87 2710	87 2480	87 2270	87 2060	93 106	0	88 3460	88 2690	88 2460	88 2250	88 2050	93 106		
5	86 3490	86 2710	86 2480	86 2260	86 2060	93 105	5	86 3450	86 2680	86 2460	86 2250	86 2050	92 105		
10	84 3440	84 2660	84 2450	85 2290	86 2130	93 105	10	84 3400	84 2640	84 2420	84 2210	84 2010	91 103		
15	82 3390	84 2750	85 2570	86 2390	86 2230	92 104	15	82 3350	82 2590	83 2390	84 2230	84 2070	91 103		
20	82 3490	85 2880	85 2690	86 2500	87 2330	92 104	20	80 3290	82 2680	83 2510	84 2330	85 2170	90 102		
25	83 3660	85 3010	86 2820	87 2630	87 2440	92 103	25	81 3410	83 2810	84 2620	85 2440	85 2270	90 102		
30	84 3840	86 3170	87 2960	87 2760	88 2570	92 103	30	81 3580	84 2950	84 2750	85 2570	86 2390	90 101		
35	84 4060	87 3350	87 3130	88 2920	89 2720	92 103	35	82 3770	84 3110	85 2900	86 2700	86 2520	90 101		
40	85 4300	87 3550	88 3320	89 3100	89 2880	92 103	40	83 3990	85 3290	86 3070	86 2860	87 2660	90 101		
44	86 4510	88 3730	89 3480	89 3250	90 3030	92 103	44	84 4180	86 3450	86 3220	87 3000	88 2800	90 101		

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																			
TEMP		TAILWIND		ZERO		HEADWINDS				TEMP		TAILWIND		ZERO		HEADWINDS											
DEG	C	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2	DEG	C	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2								
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT								
-35		92	3190	92	2470	92	2260	92	2070	92	1880	98	112	-35		92	3170	92	2470	92	2260	92	2070	92	1880	99	113
-30		91	3240	91	2520	91	2310	91	2110	91	1920	98	112	-30		92	3220	92	2510	92	2300	92	2110	92	1920	98	113
-25		91	3300	91	2560	91	2350	91	2150	91	1960	98	112	-25		92	3280	92	2560	92	2340	92	2150	92	1960	98	113
-20		91	3350	91	2610	91	2390	91	2190	91	2000	97	111	-20		91	3330	91	2600	91	2390	91	2180	91	1990	98	113
-15		91	3400	91	2640	91	2430	91	2220	91	2020	97	111	-15		91	3370	91	2630	91	2420	91	2210	91	2020	98	112
-10		90	3420	90	2660	90	2440	90	2230	90	2040	96	110	-10		90	3390	90	2650	90	2430	90	2230	90	2040	97	111
-5		89	3430	89	2680	89	2450	89	2250	89	2050	95	109	-5		89	3410	89	2660	89	2440	89	2240	89	2050	96	110
0		88	3430	88	2670	88	2450	88	2240	88	2040	94	108	0		88	3400	88	2650	88	2440	88	2230	88	2040	95	109
5		87	3420	87	2660	87	2440	87	2230	87	2040	92	106	5		87	3390	87	2640	87	2430	87	2220	87	2030	93	107
10		85	3360	85	2620	85	2400	85	2190	85	2000	90	103	10		85	3330	85	2600	85	2380	85	2180	85	1990	91	104
15		83	3310	83	2570	83	2350	83	2150	83	1960	88	101	15		83	3270	83	2550	83	2330	83	2130	83	1940	88	101
20		81	3250	81	2520	81	2330	82	2170	83	2020	88	101	20		81	3210	81	2500	81	2290	81	2090	81	1900	86	99
25		79	3200	81	2610	82	2440	82	2270	83	2110	88	100	25		79	3160	79	2450	79	2260	80	2100	81	1950	86	99
30		79	3330	81	2740	82	2560	83	2380	83	2210	88	100	30		77	3100	79	2540	80	2370	80	2210	81	2050	86	98
35		80	3500	82	2880	83	2690	83	2500	84	2320	88	99	35		77	3250	80	2670	80	2490	81	2320	82	2150	86	98
40		81	3690	83	3040	83	2840	84	2650	85	2460	88	99	40		78	3410	80	2800	81	2620	81	2430	82	2260	86	97
44		81	3870	83	3180	84	2970	85	2770	85	2580	88	99	44		79	3570	81	2930	81	2740	82	2550	83	2370	86	97

Figure 4-18 (Sheet 12 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	94 4040	97 3330	98 3110	99 2900	100 2700	107 117	-35	92 3910	96 3220	97 3010	98 2800	99 2610	106 116		
-30	93 4130	97 3400	98 3180	99 2960	100 2760	107 117	-30	92 3990	96 3290	97 3070	98 2870	99 2670	106 116		
-25	93 4220	97 3480	98 3250	99 3040	100 2830	107 117	-25	92 4080	96 3360	97 3140	98 2930	99 2730	106 116		
-20	93 4310	97 3560	98 3330	99 3110	99 2900	107 117	-20	92 4170	96 3440	97 3220	97 3000	98 2800	106 116		
-15	93 4470	97 3690	98 3450	99 3230	100 3010	107 117	-15	92 4310	96 3560	97 3330	98 3110	99 2900	106 116		
-10	94 4650	97 3840	98 3600	99 3360	100 3130	107 117	-10	93 4480	96 3700	97 3470	98 3240	99 3020	106 116		
-5	94 4830	98 4000	99 3740	99 3500	100 3270	107 117	-5	93 4660	96 3860	97 3610	98 3370	99 3150	105 116		
0	95 5040	98 4170	99 3900	100 3650	101 3410	107 116	0	94 4850	97 4020	98 3760	99 3520	100 3280	105 115		
5	95 5270	98 4360	99 4090	100 3820	101 3570	106 116	5	94 5080	97 4200	98 3940	99 3680	100 3440	105 115		
10	96 5550	99 4600	100 4310	101 4030	102 3760	106 116	10	95 5340	98 4430	99 4150	100 3880	100 3620	105 115		
15	97 5860	100 4850	101 4540	101 4250	102 3970	106 116	15	96 5640	99 4670	99 4370	100 4090	101 3820	105 115		
20	97 6200	100 5130	101 4810	102 4500	103 4200	106 116	20	96 5960	99 4940	100 4620	101 4320	102 4040	105 115		
25	98 6570	101 5440	102 5100	102 4760	103 4450	106 116	25	97 6310	100 5230	101 4900	101 4580	102 4280	105 115		
30	99 7010	102 5780	102 5410	103 5060	104 4730	106 116	30	98 6710	101 5550	101 5200	102 4870	103 4540	105 115		
35	98 7700	102 6150	103 5760	104 5390	104 5040	106 116	35	99 7140	101 5910	102 5530	103 5180	103 4840	105 115		
36	97 7860	102 6230	103 5840	104 5460	104 5100	106 116	38	98 7540	102 6140	102 5750	103 5380	104 5030	105 115		
38	97 8170	103 6400	103 5990	104 5600	105 5240	106 116	40	98 7860	102 6310	103 5910	103 5520	104 5160	105 115		
							41	98 8010	102 6390	103 5990	103 5600	104 5230	105 115		

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	91 3700	94 3050	95 2840	96 2650	97 2470	104 115	-35	90 3570	92 2880	93 2690	94 2500	95 2330	102 113		
-30	91 3780	94 3110	95 2910	96 2710	97 2520	104 115	-30	90 3640	92 2940	93 2740	94 2560	95 2380	102 113		
-25	91 3860	94 3180	95 2970	96 2770	97 2580	104 115	-25	90 3700	92 3000	93 2810	94 2620	95 2440	102 113		
-20	90 3940	94 3250	95 3040	96 2840	97 2640	104 114	-20	89 3770	92 3070	93 2870	94 2680	95 2500	102 113		
-15	91 4070	94 3360	95 3140	96 2940	97 2740	104 114	-15	89 3850	92 3180	93 2970	94 2770	95 2580	102 113		
-10	91 4220	94 3490	95 3260	96 3050	97 2840	104 114	-10	89 3980	92 3290	93 3070	94 2870	95 2680	102 113		
-5	91 4380	95 3620	96 3390	96 3170	97 2960	104 114	-5	90 4120	93 3410	94 3190	95 2980	95 2780	102 112		
0	92 4560	95 3770	96 3530	97 3300	98 3080	104 114	0	90 4280	93 3540	94 3320	95 3100	96 2890	102 112		
5	92 4770	95 3950	96 3690	97 3450	98 3220	104 114	5	91 4470	94 3700	94 3460	95 3240	96 3020	102 112		
10	93 5020	96 4150	97 3890	98 3640	99 3390	104 114	10	91 4700	94 3890	95 3640	96 3410	97 3180	102 112		
15	94 5290	97 4380	98 4100	98 3830	99 3580	104 114	15	92 4950	95 4100	96 3840	96 3590	97 3350	102 112		
20	95 5580	97 4620	98 4330	99 4050	100 3780	104 114	20	93 5230	95 4330	96 4050	97 3790	98 3540	102 112		
25	95 5910	98 4890	99 4580	100 4290	100 4000	104 114	25	94 5520	96 4570	97 4280	98 4010	98 3740	102 112		
30	96 6270	99 5190	99 4860	100 4550	101 4250	104 114	30	94 5860	97 4850	98 4540	98 4250	99 3970	102 112		
35	97 6670	99 5520	100 5170	101 4840	101 4520	104 114	35	95 6220	98 5160	98 4830	99 4520	99 4220	102 112		
40	98 7110	100 5880	101 5510	101 5160	102 4820	104 114	40	96 6630	98 5490	99 5140	99 4810	100 4490	102 112		
41	98 7210	100 5960	101 5580	101 5220	102 4880	104 114	42	96 6800	98 5630	99 5270	100 4930	100 4610	102 112		
42	98 7300	100 6040	101 5660	102 5290	102 4950	104 114									

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	90 3530	90 2710	91 2530	92 2360	93 2190	100 112	-35	90 3490	90 2680	90 2450	90 2230	91 2060	98 111		
-30	90 3600	90 2770	91 2590	92 2410	93 2240	100 112	-30	90 3550	90 2730	90 2500	90 2270	91 2110	98 111		
-25	90 3660	90 2830	91 2650	92 2470	93 2300	100 112	-25	90 3610	90 2780	90 2540	90 2330	91 2160	98 111		
-20	89 3720	90 2900	91 2710	92 2530	93 2350	100 112	-20	90 3670	90 2830	90 2580	90 2380	91 2210	98 111		
-15	88 3730	90 2990	91 2800	92 2610	93 2430	100 112	-15	89 3680	89 2840	89 2630	90 2460	91 2290	98 110		
-10	87 3750	90 3100	91 2900	92 2710	93 2520	100 111	-10	87 3680	89 2920	89 2730	90 2550	91 2370	98 110		
-5	88 3890	91 3210	92 3000	93 2800	94 2610	100 111	-5	86 3670	89 3020	90 2830	91 2640	92 2460	98 110		
0	88 4030	91 3330	92 3120	93 2910	94 2710	100 111	0	86 3790	89 3130	90 2930	91 2740	92 2550	98 109		
5	89 4190	92 3470	92 3250	93 3030	94 2830	100 110	5	87 3940	90 3260	90 3050	91 2840	92 2650	98 109		
10	89 4410	92 3650	93 3410	94 3190	95 2970	100 110	10	87 4120	90 3410	91 3190	92 2980	93 2780	98 109		
15	90 4640	93 3840	94 3590	94 3360	95 3130	100 110	15	88 4330	91 3590	92 3360	92 3130	93 2920	98 109		
20	91 4890	94 4050	94 3790	95 3540	96 3300	100 110	20	89 4570	91 3780	92 3540	93 3300	94 3080	98 109		
25	92 5160	94 4270	95 4000	96 3740	96 3490	100 110	25	90 4820	92 3990	93 3730	94 3490	94 3260	98 108		
30	92 5470	95 4530	96 4240	96 3960	97 3700	100 110	30	90 5100	93 4220	94 3950	94 3690	95 3450	98 108		
35	93 5800	96 4810	96 4500	97 4210	98 3930	100 110	35	91 5410	94 4480	94 4190	95 3920	95 3660	98 108		
40	94 6180	96 5120	97 4790	97 4480	98 4190	100 110	40	92 5750	94 4760	95 4460	95 4170	96 3890	98 108		
42	94 6340	97 5240	97 4920	98 4600	98 4290	100 110	42	92 5900	95 4880	95 4570	96 4270	96 3990	98 108		

Figure 4-18 (Sheet 13 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														</

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7⁰
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2				
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS								
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT					
-35	93	4210	97	3470	98	3240	99	3030	100	2820	107	117	-35	92	4070	96	3350	97	3140	98	2930	99	2720	106	116
-30	93	4340	97	3580	98	3350	99	3120	100	2910	107	117	-30	92	4190	96	3450	97	3230	98	3010	99	2810	106	116
-25	94	4470	97	3690	98	3450	99	3230	100	3010	107	117	-25	92	4310	96	3560	97	3330	98	3110	99	2900	106	116
-20	94	4610	97	3820	98	3570	99	3340	100	3110	107	117	-20	93	4450	96	3680	97	3440	98	3220	99	3000	106	116
-15	94	4800	97	3970	98	3720	99	3470	100	3240	107	117	-15	93	4620	96	3830	97	3580	98	3350	99	3120	105	116
-10	94	4990	98	4130	99	3870	100	3620	100	3370	107	116	-10	93	4810	97	3980	98	3730	98	3480	99	3250	105	116
-5	95	5190	98	4300	99	4030	100	3770	101	3520	106	116	-5	94	5000	97	4150	98	3880	99	3630	100	3390	105	115
0	95	5410	98	4480	99	4200	100	3930	101	3670	106	116	0	94	5210	97	4320	98	4050	99	3780	100	3530	105	115
5	96	5680	99	4710	100	4410	101	4130	101	3850	106	116	5	95	5470	98	4530	99	4250	100	3970	100	3710	105	115
10	96	5980	99	4950	100	4640	101	4340	102	4060	106	116	10	95	5750	98	4770	99	4470	100	4180	101	3910	105	115
15	97	6310	100	5230	101	4900	102	4590	102	4290	106	116	15	96	6070	99	5030	100	4710	101	4410	101	4120	105	115
20	98	6680	101	5540	101	5190	102	4860	103	4540	106	116	20	97	6420	100	5320	100	4990	101	4670	102	4360	105	115
25	97	7220	101	5870	102	5500	103	5150	104	4820	106	116	25	98	6810	100	5640	101	5290	102	4950	102	4630	105	115
30	96	7910	102	6250	103	5860	103	5480	104	5120	106	116	30	98	7330	101	6000	102	5620	102	5260	103	4920	105	115
31	96	8060	102	6330	103	5930	104	5550	104	5190	106	116	33	97	7760	101	6230	102	5840	103	5470	103	5110	105	115
33	96	8380	102	6500	103	6090	104	5690	104	5320	106	116	35	97	8060	102	6400	102	5990	103	5610	104	5240	105	115
													37	96	8400	102	6570	102	6150	103	5760	104	5380	105	115

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 160 KIAS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS				VR V2		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS			V1 DIST	10 KTS		20 KTS	30 KTS					
	KIAS	FT		KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT		KIAS	FT
-35	91	3850	94 3170	95 2960	96 2760	97 2570	104 114	-35	89	3690	92 3000	93 2800	94 2610	95 2430	102 113				
-30	91	3960	94 3260	95 3050	96 2850	97 2650	104 114	-30	89	3740	92 3080	93 2880	94 2690	95 2500	102 113				
-25	91	4070	94 3360	95 3140	96 2930	97 2730	104 114	-25	89	3840	92 3170	93 2970	94 2770	95 2580	102 113				
-20	91	4190	94 3460	95 3240	96 3030	97 2820	104 114	-20	89	3960	92 3270	93 3060	94 2850	95 2660	102 113				
-15	91	4350	94 3600	95 3370	96 3140	97 2930	104 114	-15	89	4100	93 3390	93 3170	94 2960	95 2760	102 112				
-10	92	4520	95 3740	96 3500	97 3270	97 3050	104 114	-10	90	4240	93 3510	94 3280	95 3070	95 2860	102 112				
-5	92	4700	95 3890	96 3650	97 3410	98 3180	104 114	-5	90	4410	93 3650	94 3420	95 3200	96 2980	102 112				
0	92	4890	95 4050	96 3800	97 3550	98 3320	104 114	0	91	4590	94 3800	94 3560	95 3330	96 3110	102 112				
5	93	5130	96 4250	97 3980	98 3720	98 3480	104 114	5	91	4810	94 3980	95 3730	96 3490	97 3260	102 112				
10	94	5390	97 4470	97 4190	98 3920	99 3660	104 114	10	92	5050	95 4190	95 3920	96 3670	97 3420	102 112				
15	94	5680	97 4710	98 4410	99 4130	99 3860	104 114	15	93	5320	95 4410	96 4130	97 3860	98 3610	102 112				
20	95	6010	98 4980	99 4670	99 4370	100 4080	104 114	20	93	5610	96 4660	97 4360	97 4080	98 3810	102 112				
25	96	6360	98 5280	99 4940	100 4630	101 4320	104 114	25	94	5940	97 4930	97 4620	98 4320	99 4040	102 112				
30	97	6770	99 5600	100 5250	101 4920	101 4590	104 114	30	95	6310	97 5230	98 4900	99 4590	99 4290	102 112				
35	97	7200	100 5970	100 5590	101 5230	102 4890	104 114	35	96	6710	98 5560	99 5210	99 4880	100 4560	102 112				
37	98	7390	100 6120	101 5740	101 5370	102 5020	104 114	40	96	7160	99 5930	99 5560	100 5200	100 4870	102 112				
40	98	7750	100 6370	101 5970	102 5580	102 5220	103 114												

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S								VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S								VR V2														
	10 KTS			20 KTS		30 KTS		10 KTS		20 KTS				30 KTS			10 KTS		20 KTS		30 KTS																		
	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT			V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT																	
-35	90	3640	90	2820	91	2640	92	2460	93	2290	100	112	-35	90	3600	90	2770	90	2530	90	2320	91	2150	98	111														
-30	89	3680	90	2910	91	2720	92	2530	93	2360	100	112	-30	89	3630	89	2800	89	2560	90	2380	91	2220	98	110														
-25	88	3720	90	2990	91	2800	92	2610	93	2430	100	112	-25	89	3670	89	2830	89	2630	90	2450	91	2280	98	110														
-20	88	3740	90	3080	91	2880	92	2690	93	2510	100	111	-20	88	3690	88	2900	89	2710	90	2530	91	2360	98	110														
-15	88	3860	91	3190	92	2990	92	2790	93	2600	100	111	-15	87	3700	89	3000	90	2810	91	2620	91	2440	98	110														
-10	88	4000	91	3300	92	3090	93	2890	94	2690	100	111	-10	86	3760	89	3110	90	2910	91	2720	92	2530	98	109														
-5	88	4140	91	3430	92	3210	93	3000	94	2790	100	110	-5	86	3900	89	3220	90	3010	91	2810	92	2630	98	109														
0	89	4300	92	3560	92	3330	93	3120	94	2910	100	110	0	87	4040	90	3340	90	3130	91	2920	92	2720	98	109														
5	89	4500	92	3730	93	3490	94	3260	95	3050	100	110	5	87	4210	90	3490	91	3260	92	3050	92	2840	98	109														
10	90	4720	93	3920	94	3670	94	3430	95	3200	100	110	10	88	4420	91	3660	91	3430	92	3200	93	2990	98	109														
15	91	4970	93	4120	94	3860	95	3610	96	3370	100	110	15	89	4640	91	3850	92	3600	93	3370	94	3140	98	109														
20	91	5250	94	4350	95	4070	95	3810	96	3560	100	110	20	89	4900	92	4060	93	3800	93	3550	94	3320	98	109														
25	92	5550	95	4600	95	4310	96	4030	97	3770	100	110	25	90	5170	93	4290	93	4020	94	3760	95	3510	98	108														
30	93	5880	95	4880	96	4570	97	4280	97	3990	100	110	30	91	5480	93	4540	94	4260	95	3980	95	3720	98	108														
35	94	6250	96	5190	97	4860	97	4550	98	4250	100	110	35	92	5820	94	4830	95	4520	95	4230	96	3950	98	108														
40	95	6660	97	5520	97	5170	98	4840	98	4520	100	110	40	93	6190	95	5130	95	4810	96	4500	96	4210	98	108														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S								VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S								VR V2 KIAS				
	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS													
-35	90	3560	90	2740	90	2510	90	2290	90	2080	97	109	-35	91	3520	91	2720	91	2490	91	2270	91	2070	96	109						
-30	90	3590	90	2770	90	2530	90	2310	90	2100	97	109	-30	90	3550	90	2750	90	2510	90	2300	90	2090	95	108						
-25	89	3620	89	2800	89	2560	89	2330	89	2140	97	109	-25	89	3580	89	2770	89	2540	89	2320	89	2110	95	108						
-20	88	3650	88	2820	88	2580	88	2380	89	2210	97	109	-20	88	3610	88	2790	88	2550	88	2330	88	2130	95	107						
-15	87	3650	87	2820	88	2640	89	2460	89	2290	97	108	-15	87	3600	87	2790	87	2550	87	2330	87	2140	95	107						
-10	86	3650	87	2920	88	2730	89	2550	90	2370	96	108	-10	86	3600	86	2790	86	2560	87	2390	88	2220	95	107						
-5	84	3660	87	3030	88	2830	89	2640	90	2460	96	108	-5	85	3590	85	2840	86	2650	87	2470	88	2300	95	106						
0	85	3790	88	3140	88	2930	89	2740	90	2550	96	107	0	83	3590	86	2940	86	2750	87	2560	88	2390	94	106						
5	85	3950	88	3260	89	3050	90	2850	90	2660	96	107	5	83	3700	86	3060	87	2860	88	2670	88	2490	94	106						
10	86	4120	89	3410	89	3190	90	2980	91	2780	96	107	10	84	3860	86	3190	87	2980	88	2790	89	2600	94	105						
15	87	4330	89	3590	90	3360	91	3140	91	2930	96	107	15	84	4040	87	3340	88	3130	89	2920	89	2720	94	105						
20	87	4560	90	3780	91	3540	91	3310	92	3090	96	107	20	85	4250	88	3520	88	3290	89	3080	90	2870	94	105						
25	88	4820	91	3990	91	3740	92	3500	93	3260	96	107	25	86	4480	88	3710	89	3470	90	3250	90	3030	94	105						
30	89	5100	91	4230	92	3960	93	3700	93	3450	96	107	30	87	4740	89	3930	90	3680	90	3440	91	3210	94	105						
35	90	5410	92	4480	93	4200	93	3930	94	3670	96	107	35	88	5020	90	4160	90	3900	91	3640	92	3400	94	105						
40	91	5750	93	4770	93	4460	94	4180	94	3900	96	107	40	89	5340	90	4420	91	4140	92	3870	92	3610	94	105						

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
					V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST		V1	DIST						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST									
-35	91	3480	91	2700	91	2470	91	2260	91	2060	97	110	-35	91	3450	91	2680	91	2460	91	2250	91	2050	97	111						
-30	90	3520	90	2730	90	2500	90	2280	90	2080	96	109	-30	90	3480	90	2710	90	2480	90	2270	90	2070	97	110						
-25	89	3540	89	2750	89	2520	89	2300	89	2100	95	108	-25	90	3510	90	2730	90	2500	90	2290	90	2090	96	109						
-20	89	3570	89	2770	89	2530	89	2320	89	2110	94	107	-20	89	3530	89	2750	89	2520	89	2300	89	2100	95	108						
-15	87	3560	87	2760	87	2530	87	2310	87	2110	93	106	-15	88	3520	88	2740	88	2510	88	2300	88	2100	93	107						
-10	86	3560	86	2760	86	2530	86	2310	86	2110	93	105	-10	86	3520	86	2740	86	2510	86	2290	86	2090	92	105						
-5	85	3550	85	2750	85	2520	85	2310	86	2150	93	105	-5	85	3510	85	2730	85	2500	85	2290	85	2080	91	104						
0	83	3540	83	2750	84	2570	85	2400	86	2230	93	105	0	84	3490	84	2720	84	2490	84	2280	84	2080	91	103						
5	82	3510	84	2860	85	2680	85	2500	86	2320	92	104	5	82	3460	82	2690	83	2490	83	2330	84	2160	91	103						
10	82	3610	84	2980	85	2790	86	2600	87	2430	92	104	10	80	3420	82	2780	83	2600	84	2430	84	2260	90	102						
15	82	3770	85	3120	86	2910	86	2720	87	2540	92	103	15	80	3520	83	2910	83	2720	84	2540	85	2360	90	102						
20	83	3950	85	3270	86	3060	87	2850	88	2660	92	103	20	81	3680	83	3040	84	2850	85	2650	85	2470	90	101						
25	84	4160	86	3450	87	3220	88	3010	88	2810	92	103	25	82	3860	84	3190	85	2980	85	2790	86	2600	90	101						
30	85	4400	87	3640	88	3410	88	3180	89	2970	92	103	30	82	4080	85	3370	85	3150	86	2940	87	2740	90	101						
35	85	4660	88	3860	88	3610	89	3370	89	3150	92	103	35	83	4320	85	3570	86	3340	87	3120	87	2900	90	101						
40	86	4940	88	4090	89	3830	89	3580	90	3340	92	103	40	84	4570	86	3780	87	3540	87	3310	88	3080	90	101						

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS								
			10 KTS		20 KTS		30 KTS					10 KTS		20 KTS		30 KTS									
			V1	DIST	V1	DIST	V1					DIST	V1	DIST	V1	DIST		V1	DIST						
			KIAS	FT	KIAS	FT	KIAS					FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT				
-35	91	3430	91	2670	91	2450	91	2240	91	2050	98	112	-35	92	3410	92	2660	92	2440	92	2240	92	2040	99	113
-30	91	3460	91	2690	91	2470	91	2260	91	2060	97	111	-30	91	3430	91	2680	91	2460	91	2260	91	2060	98	112
-25	90	3480	90	2710	90	2490	90	2280	90	2080	96	110	-25	90	3460	90	2700	90	2480	90	2270	90	2080	97	111
-20	89	3500	89	2730	89	2500	89	2290	89	2090	95	109	-20	90	3470	90	2710	90	2490	90	2280	90	2090	96	110
-15	88	3490	88	2720	88	2500	88	2290	88	2090	94	108	-15	88	3460	88	2710	88	2490	88	2280	88	2080	95	109
-10	87	3480	87	2720	87	2490	87	2280	87	2080	92	106	-10	87	3450	87	2700	87	2480	87	2270	87	2070	93	107
-5	85	3470	85	2700	85	2480	85	2270	85	2070	91	104	-5	86	3430	86	2680	86	2460	86	2260	86	2060	92	105
0	84	3450	84	2690	84	2470	84	2260	84	2060	89	103	0	84	3420	84	2670	84	2450	84	2240	84	2050	90	103
5	82	3420	82	2660	82	2440	82	2230	82	2030	88	101	5	83	3380	83	2640	83	2420	83	2210	83	2020	88	101
10	81	3380	81	2630	81	2420	82	2260	82	2100	88	101	10	81	3340	81	2600	81	2390	81	2180	81	1990	86	99
15	79	3330	80	2700	81	2530	82	2360	83	2190	88	100	15	79	3290	79	2560	79	2350	80	2180	80	2030	86	99
20	79	3430	81	2830	82	2640	82	2470	83	2290	88	100	20	77	3240	79	2620	79	2450	80	2280	81	2120	86	98
25	79	3590	81	2960	82	2770	83	2580	84	2400	88	99	25	77	3330	79	2750	80	2560	81	2390	81	2220	86	98
30	80	3770	82	3110	83	2910	83	2720	84	2530	88	99	30	78	3490	80	2880	80	2690	81	2510	82	2330	86	97
35	81	3990	83	3290	84	3080	84	2870	85	2670	88	99	35	78	3680	80	3030	81	2830	82	2640	82	2460	86	97
40	82	4220	84	3490	84	3260	85	3040	85	2840	88	99	40	79	3890	81	3210	82	3000	82	2790	83	2600	86	97

Figure 4-18 (Sheet 16 of 30)



FLAPS - 7⁰
8000 FEET

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

WEIGHT = 16300 LBS										VENR = 160 KIAS				WEIGHT = 16000 LBS										VENR = 160 KIAS														
TEMP DEG C	TAILWIND		ZERO WIND		HEAD WINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEAD WINDS						VR V2															
	10 KTS	V1 DIST	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST			V1 DIST		10 KTS	20 KTS	30 KTS																					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT							
-35	93	4420	97	3650	98	3410	99	3190	100	2970	107	117	-35	92	4260	96	3520	97	3290	98	3070	99	2870	106	116	-35	92	4260	96	3520	97	3290	98	3070	99	2870	106	116
-30	94	4590	97	3790	98	3550	99	3320	100	3100	107	117	-30	93	4430	96	3660	97	3420	98	3200	99	2980	106	116	-30	93	4430	96	3660	97	3420	98	3200	99	2980	106	116
-25	94	4770	97	3950	98	3700	99	3450	100	3220	107	117	-25	93	4600	96	3810	97	3560	98	3330	99	3110	105	116	-25	93	4600	96	3810	97	3560	98	3330	99	3110	105	116
-20	94	4960	98	4110	99	3850	99	3600	100	3360	107	117	-20	93	4780	96	3960	97	3710	98	3460	99	3230	105	116	-20	93	4780	96	3960	97	3710	98	3460	99	3230	105	116
-15	95	5160	98	4270	99	4000	100	3740	101	3490	107	116	-15	94	4970	97	4120	98	3860	99	3610	99	3370	105	115	-15	94	4970	97	4120	98	3860	99	3610	99	3370	105	115
-10	95	5360	98	4450	99	4170	100	3900	101	3640	106	116	-10	94	5170	97	4280	98	4010	99	3750	100	3510	105	115	-10	94	5170	97	4280	98	4010	99	3750	100	3510	105	115
-5	95	5590	98	4630	99	4340	100	4060	101	3800	106	116	-5	94	5380	97	4460	98	4180	99	3910	100	3660	105	115	-5	94	5380	97	4460	98	4180	99	3910	100	3660	105	115
0	96	5830	99	4840	100	4530	101	4240	101	3970	106	116	0	95	5610	98	4660	99	4360	100	4080	100	3820	105	115	0	95	5610	98	4660	99	4360	100	4080	100	3820	105	115
5	96	6120	99	5080	100	4760	101	4460	102	4170	106	116	5	95	5890	98	4890	99	4580	100	4290	101	4010	105	115	5	95	5890	98	4890	99	4580	100	4290	101	4010	105	115
10	97	6440	100	5340	101	5010	102	4690	102	4380	106	116	10	96	6190	99	5140	100	4810	100	4510	101	4210	105	115	10	96	6190	99	5140	100							

WEIGHT = 15500 LBS										VENR = 160 KIAS				WEIGHT = 15000 LBS										VENR = 160 KIAS				
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2			
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS					10 KTS		V1 DIST		20 KTS		30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	91	4030	94	3320	95	3110	96	2900	97	2700	104	114	-35	89	3800	92	3140	93	2940	94	2740	95	2550	102	112	102	113	
-30	91	4170	94	3450	95	3220	96	3010	97	2810	104	114	-30	89	3940	92	3250	93	3040	94	2840	95	2650	102	113	102	113	
-25	91	4330	94	3580	95	3350	96	3130	97	2920	104	114	-25	89	4080	92	3370	93	3150	94	2940	95	2750	102	112	102	112	
-20	91	4490	95	3720	96	3480	96	3250	97	3040	104	114	-20	90	4220	93	3490	94	3270	95	3050	95	2850	102	112	102	112	
-15	92	4670	95	3870	96	3620	97	3380	98	3160	104	114	-15	90	4380	93	3630	94	3400	95	3170	96	2960	102	112	102	112	
-10	92	4850	95	4020	96	3770	97	3520	98	3290	104	114	-10	90	4550	93	3770	94	3530	95	3300	96	3080	102	112	102	112	
-5	93	5050	96	4190	96	3920	97	3670	98	3430	104	114	-5	91	4730	94	3920	95	3680	95	3440	96	3210	102	112	102	112	
0	93	5260	96	4370	97	4090	98	3830	98	3580	104	114	0	91	4930	94	4090	95	3830	96	3580	97	3350	102	112	102	112	
5	94	5520	96	4580	97	4290	98	4020	99	3750	104	114	5	92	5170	95	4290	95	4020	96	3760	97	3510	102	112	102	112	
10	94	5800	97	4810	98	4510	99	4220	99	3940	104	114	10	92	5420	95	4500	96	4220	97	3950	97	3690	102	112	102	112	
15	95	6120	98	5080	98	4760	99	4460	100	4170	104	114	15	93	5720	96	4750	96	4450	97	4160	98	3890	102	112	102	112	
20	96	6470	98	5370	99	5040	100	4720	100	4410	104	114	20	94	6040	96	5020	97	4700	98	4400	98	4120	102	112	102	112	
25	96	6870	99	5700	100	5340	100	5010	101	4680	104	114	25	94	6410	97	5320	98	4980	98	4670	99	4360	102	112	102	112	
30	97	7310	99	6060	100	5680	101	5320	101	4980	104	114	30	95	6810	98	5650	98	5300	99	4960	100	4640	102	112	102	112	
33	97	7680	100	6300	101	5910	101	5530	102	5170	104	114	35	96	7250	98	6020	99	5640	99	5280	100	4940	102	112	102	112	
35	97	7980	100	6460	101	6060	101	5670	102	5300	103	114	36	96	7350	98	6090	99	5710	100	5350	100	5000	102	112	102	112	
36	96	8140	100	6550	101	6140	101	5750	102	5370	103	114	38	95	7550	99	6250	99	5860	100	5490	100	5130	102	112	102	112	

WEIGHT = 14500 LBS										VENR = 160 KIAS				WEIGHT = 14000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S				VR	V2								
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS				20 KTS	30 KTS		10 KTS	V1 DIST	10 KTS	20 KTS			30 KTS							
	V1 KIAS	FT	V1 KIAS	FT	V1 KIAS	FT	V1 KIAS				FT	V1 KIAS	FT	V1 KIAS	FT	V1 KIAS	FT			V1 KIAS	FT	V1 KIAS	FT				
-35	89	3730	90	2960	91	2770	92	2580	93	2400	100	112	-35	89	3690	89	2840	89	2600	90	2430	91	2260	98	110		
-30	88	3750	90	3070	91	2870	92	2680	93	2490	100	111	-30	88	3700	88	2880	89	2700	90	2520	91	2340	98	110		
-25	87	3850	91	3180	91	2970	92	2780	93	2590	100	111	-25	87	3700	89	2990	90	2790	90	2610	91	2430	98	110		
-20	88	3980	91	3290	92	3080	93	2870	94	2680	100	111	-20	86	3740	89	3100	90	2900	91	2700	92	2520	98	110		
-15	88	4120	91	3410	92	3190	93	2980	94	2780	100	111	-15	86	3870	89	3210	90	3000	91	2800	92	2610	98	109		
-10	88	4270	91	3530	92	3310	93	3090	94	2880	100	110	-10	87	4010	89	3320	90	3100	91	2900	92	2700	98	109		
-5	89	4430	92	3670	93	3440	93	3220	94	3000	100	110	-5	87	4150	90	3440	91	3220	91	3010	92	2810	98	109		
0	89	4620	92	3830	93	3590	94	3350	95	3130	100	110	0	87	4320	90	3580	91	3350	92	3130	92	2920	98	109		
5	90	4830	93	4010	93	3760	94	3510	95	3280	100	110	5	88	4520	91	3750	91	3510	92	3280	93	3060	98	109		
10	90	5070	93	4200	94	3940	95	3690	95	3440	100	110	10	89	4730	91	3930	92	3680	93	3440	93	3210	98	109		
15	91	5340	94	4430	95	4150	95	3890	96	3630	100	110	15	89	4980	92	4130	93	3870	93	3620	94	3390	98	109		
20	92	5640	94	4680	95	4390	96	4110	96	3840	100	110	20	90	5260	92	4360	93	4090	94	3830	94	3570	98	108		
25	93	5970	95	4960	96	4650	96	4350	97	4070	100	110	25	91	5560	93	4620	94	4330	94	4050	95	3780	98	108		
30	93	6340	96	5260	96	4930	97	4620	98	4320	100	110	30	91	5900	94	4900	94	4590	95	4300	96	4010	98	108		
35	94	6740	96	5600	97	5250	98	4920	98	4590	100	110	35	92	6270	94	5210	95	4880	96	4570	96	4270	98	108		
38	95	7010	97	5810	97	5450	98	5100	98	4770	100	110	38	93	6510	95	5400	95	5070	96	4740	96	4430	98	108		

Figure 4-18 (Sheet 17 of 30)

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	89 3640	89 2810	89 2570	89 2350	89 2140	97 109		-35	90 3600	90 2790	90 2550	90 2330	90 2120	95 108	
-30	88 3650	88 2820	88 2580	88 2360	89 2200	97 109		-30	88 3610	88 2790	88 2560	88 2330	88 2130	95 107	
-25	87 3660	87 2820	88 2620	89 2450	89 2280	97 108		-25	87 3610	87 2800	87 2560	87 2340	87 2140	95 107	
-20	86 3660	87 2910	88 2720	89 2540	90 2360	96 108		-20	86 3610	86 2800	86 2560	87 2380	88 2210	95 107	
-15	85 3670	87 3010	88 2810	89 2630	90 2450	96 108		-15	85 3620	85 2820	86 2640	87 2460	88 2290	95 107	
-10	85 3770	87 3120	88 2920	89 2720	90 2540	96 108		-10	84 3620	85 2920	86 2730	87 2550	88 2380	95 106	
-5	85 3900	88 3230	89 3020	89 2820	90 2630	96 107		-5	83 3650	86 3020	87 2830	87 2640	88 2460	94 106	
0	85 4040	88 3350	89 3130	90 2930	90 2730	96 107		0	83 3790	86 3140	87 2930	88 2740	88 2550	94 106	
5	86 4220	88 3490	89 3270	90 3060	91 2850	96 107		5	84 3940	86 3260	87 3050	88 2850	89 2660	94 105	
10	86 4410	89 3660	90 3430	91 3200	91 2990	96 107		10	84 4110	87 3410	88 3190	88 2980	89 2780	94 105	
15	87 4640	90 3850	90 3610	91 3370	92 3150	96 107		15	85 4320	88 3580	88 3350	89 3140	90 2930	94 105	
20	88 4900	90 4060	91 3800	92 3560	92 3320	96 107		20	86 4550	88 3780	89 3540	90 3310	90 3080	94 105	
25	89 5170	91 4290	92 4020	92 3760	93 3520	96 107		25	87 4810	89 3990	90 3740	90 3490	91 3260	94 105	
30	89 5480	92 4550	92 4260	93 3990	94 3730	96 107		30	87 5090	90 4220	90 3960	91 3700	91 3460	94 105	
35	90 5820	92 4830	93 4530	94 4240	94 3960	96 107		35	88 5400	90 4480	91 4200	91 3930	92 3670	94 105	
38	91 6040	93 5010	93 4700	94 4400	94 4110	96 107		38	89 5600	91 4640	91 4350	92 4070	92 3800	94 105	

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	90 3560	90 2770	90 2530	90 2320	90 2110	96 109		-35	90 3530	90 2750	90 2520	90 2300	90 2100	96 110	
-30	89 3570	89 2770	89 2540	89 2320	89 2110	94 107		-30	89 3530	89 2750	89 2520	89 2300	89 2100	95 108	
-25	88 3570	88 2770	88 2540	88 2320	88 2110	93 106		-25	88 3530	88 2750	88 2520	88 2300	88 2100	94 107	
-20	86 3570	86 2770	86 2540	86 2320	86 2110	93 105		-20	87 3530	87 2750	87 2520	87 2300	87 2100	92 105	
-15	85 3570	85 2770	85 2540	85 2320	86 2140	93 105		-15	85 3530	85 2750	85 2520	85 2300	85 2100	91 104	
-10	84 3570	84 2770	84 2550	85 2380	86 2220	93 105		-10	84 3530	84 2740	84 2510	84 2300	84 2100	91 103	
-5	83 3560	84 2830	84 2640	85 2470	86 2300	93 105		-5	83 3520	83 2740	83 2510	83 2300	84 2140	91 103	
0	81 3550	84 2930	85 2740	86 2560	86 2390	92 104		0	82 3510	82 2730	83 2560	83 2390	84 2220	91 103	
5	82 3690	84 3050	85 2860	86 2670	87 2480	92 104		5	80 3480	82 2850	83 2660	84 2480	84 2310	90 102	
10	82 3840	85 3180	86 2970	86 2780	87 2590	92 103		10	80 3580	83 2960	83 2770	84 2590	85 2410	90 102	
15	83 4020	85 3330	86 3110	87 2910	87 2710	92 103		15	81 3750	83 3100	84 2900	84 2710	85 2520	90 101	
20	84 4230	86 3500	87 3280	87 3060	88 2860	92 103		20	81 3920	84 3250	84 3040	85 2840	86 2640	90 101	
25	84 4460	87 3700	87 3460	88 3240	89 3020	92 103		25	82 4140	84 3420	85 3200	86 2990	86 2790	90 101	
30	85 4720	87 3910	88 3660	89 3430	89 3200	92 103		30	83 4370	85 3620	86 3390	86 3170	87 2950	90 101	
35	86 5000	88 4150	89 3880	89 3630	90 3390	92 103		35	84 4630	86 3830	86 3590	87 3350	88 3130	90 101	
38	87 5180	88 4300	89 4020	90 3760	90 3510	92 103		38	84 4790	86 3970	87 3720	87 3470	88 3240	90 101	

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2 KIAS
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	91 3500	91 2730	91 2510	91 2290	91 2100	97 111		-35	91 3480	91 2720	91 2500	91 2290	91 2090	98 112	
-30	89 3500	89 2730	89 2510	89 2290	89 2090	96 109		-30	90 3470	90 2720	90 2500	90 2290	90 2090	96 111	
-25	88 3500	88 2730	88 2500	88 2290	88 2090	94 108		-25	88 3470	88 2710	88 2490	88 2280	88 2090	95 109	
-20	87 3490	87 2730	87 2500	87 2290	87 2090	93 106		-20	87 3460	87 2710	87 2490	87 2280	87 2080	93 107	
-15	86 3490	86 2720	86 2500	86 2290	86 2090	91 105		-15	86 3460	86 2700	86 2480	86 2270	86 2080	92 106	
-10	85 3490	85 2720	85 2490	85 2280	85 2080	90 103		-10	85 3450	85 2700	85 2480	85 2270	85 2070	91 104	
-5	83 3480	83 2710	83 2490	83 2270	83 2070	89 102		-5	84 3440	84 2690	84 2470	84 2260	84 2060	89 103	
0	82 3460	82 2700	82 2470	82 2260	82 2060	88 101		0	82 3420	82 2670	82 2450	82 2240	82 2050	87 101	
5	80 3430	80 2670	81 2470	81 2310	82 2150	88 101		5	81 3390	81 2640	81 2430	81 2220	81 2020	86 99	
10	79 3400	80 2760	81 2580	82 2400	83 2240	88 100		10	79 3350	79 2610	79 2400	80 2220	80 2070	86 99	
15	78 3490	81 2880	82 2690	82 2510	83 2340	88 100		15	77 3310	78 2670	79 2490	80 2330	81 2160	86 98	
20	79 3650	81 3010	82 2820	83 2630	83 2450	88 99		20	77 3380	79 2790	80 2610	80 2430	81 2260	86 98	
25	80 3820	82 3160	83 2960	83 2760	84 2570	88 99		25	77 3540	80 2930	80 2730	81 2550	82 2370	86 97	
30	81 4040	83 3340	83 3120	84 2920	85 2720	88 99		30	78 3720	80 3070	81 2880	81 2680	82 2500	86 97	
35	81 4270	83 3530	84 3310	85 3090	85 2880	88 99		35	79 3930	81 3250	82 3040	82 2830	83 2640	86 97	
38	82 4420	84 3650	84 3420	85 3200	85 2980	88 99		38	79 4070	81 3360	82 3140	83 2930	83 2730	86 97	

Figure 4-18 (Sheet 18 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT	KIAS	FT	FT	FT		KIAS	FT	KIAS	FT	FT	FT
-35	94	4740	97	3920	98	3670	99	3430	100	3200	107	117	
-30	94	4930	98	4080	99	3820	99	3580	100	3340	107	117	
-25	95	5130	98	4250	99	3980	100	3720	101	3480	107	116	
-20	95	5330	98	4420	99	4140	100	3880	101	3620	106	116	
-15	95	5550	98	4600	99	4310	100	4040	101	3770	106	116	
-10	95	5780	99	4800	100	4500	100	4210	101	3930	106	116	
-5	96	6020	99	5000	100	4690	101	4390	101	4100	106	116	
0	96	6300	99	5230	100	4900	101	4590	102	4290	106	116	
5	97	6600	100	5480	101	5140	101	4820	102	4510	106	116	
10	96	7070	100	5770	101	5410	102	5070	103	4740	106	116	
15	95	7680	101	6110	102	5730	102	5370	103	5020	106	116	
20	94	8370	101	6480	102	6080	103	5690	104	5330	106	116	
23	94	8850	102	6730	103	6310	103	5910	104	5530	106	116	
25	93	9180	102	6900	103	6470	103	6060	104	5670	106	116	

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT	KIAS	FT	FT	FT		KIAS	FT	KIAS	FT	FT	FT
-35	91	4300	94	3560	95	3330	96	3110	97	2900	104	114	
-30	91	4470	95	3700	96	3460	96	3240	97	3020	104	114	
-25	92	4640	95	3850	96	3600	97	3370	98	3140	104	114	
-20	92	4820	95	4000	96	3750	97	3500	98	3270	104	114	
-15	92	5010	95	4160	96	3900	97	3650	98	3400	104	114	
-10	93	5220	96	4330	97	4060	97	3800	98	3550	104	114	
-5	93	5430	96	4510	97	4230	98	3960	99	3700	104	114	
0	94	5670	96	4710	97	4420	98	4140	99	3870	104	114	
5	94	5940	97	4940	98	4630	99	4330	99	4050	104	114	
10	95	6240	97	5190	98	4860	99	4560	100	4260	104	114	
15	95	6600	98	5480	99	5140	99	4820	100	4510	104	114	
20	96	6990	98	5810	99	5450	100	5100	101	4770	104	114	
25	96	7480	99	6170	100	5790	101	5420	101	5070	104	114	
28	96	7910	100	6410	100	6010	101	5630	102	5270	104	114	
30	95	8230	100	6570	101	6160	101	5770	102	5400	103	114	
32	95	8550	100	6740	101	6320	101	5920	102	5540	103	114	

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT	KIAS	FT	FT	FT		KIAS	FT	KIAS	FT	FT	FT
-35	87	3820	91	3160	91	2960	92	2760	93	2570	100	111	
-30	88	3960	91	3270	92	3060	93	2860	93	2660	100	111	
-25	88	4100	91	3390	92	3170	93	2960	94	2760	100	111	
-20	88	4240	91	3510	92	3290	93	3070	94	2870	100	110	
-15	89	4410	92	3650	92	3420	93	3200	94	2980	100	110	
-10	89	4580	92	3800	93	3560	94	3330	94	3110	100	110	
-5	89	4760	92	3950	93	3700	94	3460	95	3230	100	110	
0	90	4970	93	4120	93	3860	94	3620	95	3380	100	110	
5	90	5190	93	4310	94	4040	95	3790	95	3540	100	110	
10	91	5450	94	4530	94	4240	95	3970	96	3710	100	110	
15	92	5750	94	4780	95	4480	96	4190	96	3920	100	110	
20	92	6070	95	5050	96	4730	96	4430	97	4150	100	110	
25	93	6440	95	5350	96	5020	97	4710	97	4400	100	110	
30	94	6850	96	5690	97	5340	97	5000	98	4680	100	110	
35	95	7290	97	6050	97	5680	98	5320	98	4980	100	110	
36	95	7380	97	6130	97	5750	98	5390	99	5040	100	110	

Figure 4-18 (Sheet 19 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S								VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S								VR V2 KIAS												
					10 KTS		20 KTS		30 KTS		10 KTS								20 KTS		30 KTS																		
					V1	DIST	V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST															
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT															
-35	87	3650	87	2820	88	2610	88	2440	89	2270	97	109	-35	87	3610	87	2800	87	2560	87	2340	87	2130	95	107														
-30	86	3660	87	2890	88	2700	89	2520	89	2350	96	108	-30	86	3620	86	2800	86	2560	87	2360	87	2200	95	107														
-25	85	3670	87	3000	88	2800	89	2620	90	2440	96	108	-25	85	3620	85	2810	86	2620	87	2450	88	2280	95	107														
-20	84	3750	87	3100	88	2900	89	2710	90	2530	96	108	-20	84	3630	85	2910	86	2720	87	2540	88	2360	95	106														
-15	85	3880	88	3210	88	3010	89	2810	90	2620	96	107	-15	83	3640	86	3010	86	2810	87	2630	88	2450	94	106														
-10	85	4010	88	3320	89	3110	90	2910	90	2710	96	107	-10	83	3760	86	3120	87	2920	87	2720	88	2540	94	106														
-5	85	4160	88	3450	89	3230	90	3020	90	2810	96	107	-5	83	3900	86	3220	87	3020	88	2820	88	2630	94	105														
0	86	4330	89	3590	89	3360	90	3140	91	2930	96	107	0	84	4040	86	3350	87	3140	88	2930	89	2730	94	105														
5	86	4520	89	3750	90	3510	91	3290	91	3070	96	107	5	84	4210	87	3490	88	3270	88	3060	89	2850	94	105														
10	87	4730	90	3930	90	3680	91	3450	92	3220	96	107	10	85	4410	87	3660	88	3430	89	3200	90	2990	94	105														
15	88	4990	90	4140	91	3880	92	3630	92	3390	96	107	15	86	4640	88	3850	89	3610	89	3370	90	3150	94	105														
20	88	5260	91	4370	91	4100	92	3840	93	3580	96	107	20	86	4890	89	4060	89	3800	90	3560	91	3320	94	105														
25	89	5570	91	4630	92	4340	93	4060	93	3800	96	107	25	87	5170	89	4290	90	4020	91	3770	91	3520	94	105														
30	90	5910	92	4910	93	4600	93	4310	94	4030	96	107	30	88	5480	90	4550	91	4260	91	3990	92	3730	94	105														
35	91	6270	93	5210	93	4890	94	4580	94	4280	96	107	35	89	5810	91	4830	91	4520	92	4240	92	3960	94	105														
36	91	6350	93	5270	93	4950	94	4630	94	4340	96	107	36	89	5880	91	4890	91	4580	92	4290	92	4010	94	105														

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST		V1	DIST				
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT		
-35	88	3570	88	2770	88	2540	88	2320	88	2110	93	106	-35	88	3530	88	2750	88	2520	88	2300	88	2100	94	107
-30	87	3570	87	2770	87	2540	87	2320	87	2120	93	105	-30	87	3530	87	2750	87	2520	87	2310	87	2100	92	106
-25	85	3580	85	2780	85	2540	85	2330	86	2130	93	105	-25	86	3540	86	2750	86	2520	86	2310	86	2100	91	104
-20	84	3580	84	2780	84	2550	85	2370	86	2210	93	105	-20	85	3540	85	2750	85	2520	85	2310	85	2110	91	103
-15	83	3590	83	2810	84	2630	85	2460	86	2290	93	105	-15	83	3540	83	2750	83	2520	83	2310	84	2130	91	103
-10	82	3590	84	2910	85	2730	85	2540	86	2370	93	104	-10	82	3540	82	2750	82	2540	83	2370	84	2210	91	103
-5	81	3640	84	3020	85	2820	86	2640	86	2460	92	104	-5	81	3530	82	2810	83	2630	83	2460	84	2290	90	103
0	82	3780	84	3130	85	2930	86	2740	87	2550	92	104	0	80	3530	82	2920	83	2730	84	2550	84	2380	90	102
5	82	3930	85	3250	85	3050	86	2850	87	2650	92	103	5	80	3660	83	3030	83	2840	84	2650	85	2470	90	102
10	83	4100	85	3390	86	3180	87	2970	87	2770	92	103	10	81	3820	83	3160	84	2960	84	2760	85	2580	90	101
15	83	4310	86	3570	87	3340	87	3130	88	2920	92	103	15	81	3990	83	3310	84	3100	85	2890	86	2700	90	101
20	84	4540	86	3760	87	3530	88	3300	88	3080	92	103	20	82	4200	84	3480	85	3260	86	3050	86	2840	90	101
25	85	4790	87	3980	88	3730	88	3490	89	3250	92	103	25	83	4430	85	3680	86	3440	86	3220	87	3000	90	101
30	86	5070	88	4210	88	3950	89	3690	90	3450	92	103	30	84	4690	86	3890	86	3640	87	3410	87	3180	90	101
35	87	5370	88	4460	89	4180	90	3910	90	3660	92	103	35	84	4970	86	4120	87	3860	87	3610	88	3370	90	101
36	87	5440	89	4520	89	4230	90	3960	90	3700	92	103	36	84	5020	86	4170	87	3910	87	3650	88	3410	90	101

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT										10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT			
-35	88	3500	88	2730	88	2500	88	2290	88	2090	94	108	-35	89	3470	89	2710	89	2490	89	2280	89	2090	95	109		
-30	87	3500	87	2730	87	2500	87	2290	87	2090	93	107	-30	87	3470	87	2710	87	2490	87	2280	87	2090	94	108		
-25	86	3500	86	2730	86	2500	86	2290	86	2090	92	105	-25	86	3470	86	2710	86	2490	86	2280	86	2080	92	106		
-20	85	3500	85	2730	85	2500	85	2290	85	2090	90	104	-20	85	3460	85	2710	85	2490	85	2280	85	2080	91	105		
-15	84	3500	84	2730	84	2500	84	2290	84	2090	89	102	-15	84	3460	84	2710	84	2480	84	2270	84	2080	90	103		
-10	82	3490	82	2720	82	2500	82	2290	82	2090	88	101	-10	83	3450	83	2700	83	2480	83	2270	83	2070	88	101		
-5	81	3490	81	2720	81	2490	81	2280	82	2120	88	101	-5	81	3440	81	2690	81	2470	81	2260	81	2060	87	100		
0	80	3470	80	2710	81	2540	82	2370	82	2210	88	101	0	80	3430	80	2680	80	2460	80	2250	80	2050	86	99		
5	78	3450	80	2820	81	2640	82	2460	83	2290	88	100	5	79	3400	79	2660	79	2440	80	2280	80	2120	86	99		
10	78	3550	81	2940	81	2750	82	2570	83	2390	88	100	10	77	3370	78	2720	79	2540	80	2370	81	2210	86	98		
15	79	3710	81	3070	82	2870	83	2680	83	2500	88	99	15	77	3440	79	2850	80	2660	80	2480	81	2310	86	98		
20	80	3880	82	3220	82	3010	83	2810	84	2620	88	99	20	77	3600	79	2980	80	2780	81	2600	81	2420	86	97		
25	80	4100	82	3390	83	3180	84	2970	84	2770	88	99	25	78	3770	80	3120	81	2920	81	2730	82	2540	86	97		
30	81	4330	83	3590	84	3360	84	3140	85	2930	88	99	30	79	3980	81	3300	81	3080	82	2880	82	2680	86	97		
35	82	4580	84	3800	84	3550	85	3320	86	3100	88	99	35	79	4210	81	3490	82	3260	83	3050	83	2840	86	97		
36	82	4630	84	3840	85	3600	85	3360	86	3140	88	99	36	80	4260	82	3530	82	3300	83	3080	83	2870	86	97		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
10,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	95	5110	98	4230	99	3960	100	3710	101	3460	107	116	-35	94	4920	97	4080	98	3820	99	3570	99	3330	105	115
-30	95	5310	98	4400	99	4130	100	3860	101	3600	106	116	-30	94	5120	97	4240	98	3970	99	3720	100	3470	105	115
-25	95	5530	98	4580	99	4300	100	4020	101	3760	106	116	-25	94	5320	97	4410	98	4140	99	3870	100	3620	105	115
-20	95	5750	99	4770	99	4470	100	4190	101	3910	106	116	-20	94	5530	97	4590	98	4310	99	4030	100	3770	105	115
-15	96	5980	99	4970	100	4660	101	4360	101	4080	106	116	-15	95	5760	98	4780	99	4480	99	4200	100	3920	105	115
-10	96	6240	99	5180	100	4860	101	4550	102	4260	106	116	-10	95	6000	98	4990	99	4670	100	4380	101	4090	105	115
-5	96	6500	99	5410	100	5070	101	4750	102	4440	106	116	-5	95	6250	98	5200	99	4880	100	4570	101	4270	105	115
0	96	6870	100	5660	101	5310	101	4970	102	4650	106	116	0	96	6540	99	5440	99	5100	100	4780	101	4470	105	115
5	95	7340	100	5920	101	5560	102	5210	102	4870	106	116	5	96	6840	99	5690	100	5340	101	5000	101	4680	105	115
10	94	7940	101	6250	101	5860	102	5490	103	5140	106	116	10	95	7400	100	6000	100	5630	101	5280	102	4940	105	115
15	93	8540	101	6620	102	6210	103	5820	103	5450	106	116	15	94	8040	100	6360	101	5960	102	5590	102	5230	105	115
18	93	9100	101	6870	102	6440	103	6040	104	5650	106	116	20	93	8780	101	6750	101	6330	102	5930	103	5550	105	115
20	92	9450	102	7040	102	6610	103	6190	104	5790	106	116	24	93	9480	101	7100	102	6660	103	6240	103	5840	105	115

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																					
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																
-35	92	4620	95	3830	96	3580	97	3350	98	3130	104	114	-35	90	4340	93	3590	94	3360	95	3140	96	2930	102	112														
-30	92	4800	95	3980	96	3730	97	3490	98	3260	104	114	-30	90	4510	93	3730	94	3500	95	3270	96	3050	102	112														
-25	92	4990	95	4140	96	3880	97	3630	98	3390	104	114	-25	91	4680	93	3880	94	3640	95	3400	96	3180	102	112														
-20	93	5190	96	4310	97	4040	97	3780	98	3530	104	114	-20	91	4870	94	4040	95	3780	95	3540	96	3310	102	112														
-15	93	5400	96	4480	97	4200	98	3930	98	3680	104	114	-15	91	5060	94	4200	95	3940	96	3680	96	3440	102	112														
-10	93	5620	96	4670	97	4380	98	4100	99	3830	104	114	-10	91	5260	94	4370	95	4100	96	3840	97	3590	102	112														
-5	94	5860	97	4870	97	4560	98	4280	99	4000	104	114	-5	92	5480	95	4550	95	4270	96	4000	97	3740	102	112														
0	94	6120	97	5090	98	4770	99	4470	99	4180	104	114	0	92	5720	95	4760	96	4460	97	4180	97	3910	102	112														
5	94	6390	97	5320	98	4990	99	4680	100	4380	104	114	5	93	5970	95	4970	96	4660	97	4370	98	4090	102	112														
10	95	6740	98	5610	99	5260	99	4930	100	4610	104	114	10	93	6290	96	5230	97	4910	97	4600	98	4300	102	112														
15	96	7130	98	5930	99	5560	100	5210	100	4880	104	114	15	94	6650	97	5530	97	5190	98	4860	99	4550	102	112														
20	95	7730	99	6290	100	5900	100	5530	101	5180	104	114	20	95	7050	97	5860	98	5500	98	5150	99	4820	102	112														
24	94	8330	99	6610	100	6200	101	5810	101	5440	104	114	25	95	7490	98	6230	98	5840	99	5480	100	5130	102	112														
25	94	8480	100	6700	100	6280	101	5890	101	5510	104	114	28	96	7810	98	6470	99	6070	99	5690	100	5320	102	112														
28	94	9000	100	6960	101	6530	101	6120	102	5730	103	114	30	95	8110	98	6630	99	6220	100	5830	100	5460	102	112														
													32	95	8440	99	6800	99	6380	100	5980	100	5600	102	112														

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2						
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS	V1 DIST			V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT									
-35	88	4080	91	3380	92	3160	93	2950	94	2750	100	111	-35	86	3840	89	3180	90	2970	91	2780	92	2590	98	109
-30	88	4230	91	3500	92	3280	93	3060	94	2860	100	110	-30	86	3980	89	3290	90	3080	91	2870	92	2680	98	109
-25	89	4390	91	3640	92	3400	93	3180	94	2970	100	110	-25	87	4110	90	3410	90	3190	91	2980	92	2780	98	109
-20	89	4560	92	3780	93	3540	93	3310	94	3090	100	110	-20	87	4260	90	3530	91	3310	91	3090	92	2890	98	109
-15	89	4730	92	3930	93	3680	94	3440	95	3220	100	110	-15	87	4420	90	3670	91	3440	92	3220	92	3000	98	109
-10	90	4920	92	4090	93	3830	94	3590	95	3350	100	110	-10	88	4600	90	3820	91	3580	92	3350	93	3130	98	109
-5	90	5120	93	4260	94	3990	94	3740	95	3490	100	110	-5	88	4780	91	3970	92	3720	92	3480	93	3260	98	109
0	90	5340	93	4440	94	4170	95	3900	95	3650	100	110	0	89	4980	91	4140	92	3880	93	3640	93	3400	98	109
5	91	5580	93	4640	94	4350	95	4080	96	3810	100	110	5	89	5200	92	4320	92	4060	93	3800	94	3550	98	109
10	92	5870	94	4880	95	4580	95	4290	96	4010	100	110	10	90	5460	92	4550	93	4260	93	3990	94	3740	98	108
15	92	6190	95	5150	95	4830	96	4530	97	4240	100	110	15	90	5770	93	4800	93	4500	94	4220	95	3940	98	108
20	93	6560	95	5450	96	5120	97	4800	97	4490	100	110	20	91	6090	93	5070	94	4760	95	4460	95	4170	98	108
25	94	6960	96	5790	96	5430	97	5090	98	4770	100	110	25	92	6470	94	5380	95	5050	95	4730	96	4430	98	108
30	94	7400	96	6160	97	5780	98	5420	98	5070	100	110	30	92	6870	94	5710	95	5360	96	5030	96	4700	98	108
32	95	7590	97	6310	97	5920	98	5550	98	5200	100	110	34	93	7210	95	6000	96	5630	96	5280	97	4940	98	108
34	95	7790	97	6470	98	6070	98	5690	99	5330	100	110													

Figure 4-18 (Sheet 21 of 30)

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
10,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS									WEIGHT = 13000 LBS																
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2 KIAS		
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	85	3670	87	2980	88	2790	89	2600	90	2430	96	108	-35	85	3620	85	2800	86	2610	87	2440	88	2270	95	107
-30	84	3730	87	3090	88	2890	89	2700	90	2520	96	108	-30	84	3630	85	2890	86	2710	87	2530	88	2350	95	106
-25	85	3860	87	3200	88	2990	89	2800	90	2610	96	107	-25	83	3640	85	3000	86	2800	87	2620	88	2440	94	106
-20	85	4000	88	3310	89	3100	89	2900	90	2700	96	107	-20	83	3750	86	3100	87	2900	87	2710	88	2530	94	106
-15	85	4140	88	3430	89	3210	90	3000	90	2800	96	107	-15	83	3880	86	3210	87	3010	88	2810	88	2620	94	106
-10	86	4290	88	3560	89	3340	90	3120	91	2910	96	107	-10	84	4010	86	3330	87	3110	88	2910	89	2720	94	105
-5	86	4460	89	3700	89	3470	90	3250	91	3030	96	107	-5	84	4160	86	3450	87	3230	88	3020	89	2820	94	105
0	86	4650	89	3860	90	3620	91	3390	91	3160	96	107	0	84	4330	87	3590	88	3360	88	3150	89	2940	94	105
5	87	4840	89	4030	90	3780	91	3530	92	3300	96	107	5	85	4510	87	3740	88	3510	89	3280	89	3070	94	105
10	88	5090	90	4230	91	3970	91	3710	92	3470	96	107	10	85	4730	88	3930	89	3680	89	3450	90	3220	94	105
15	88	5360	91	4460	91	4180	92	3920	93	3660	96	107	15	86	4980	88	4140	89	3880	90	3630	90	3400	94	105
20	89	5660	91	4710	92	4420	93	4140	93	3870	96	107	20	87	5250	89	4370	90	4100	90	3840	91	3590	94	105
25	90	6000	92	4990	92	4680	93	4390	94	4100	96	107	25	88	5560	90	4630	90	4340	91	4060	92	3800	94	105
30	90	6370	92	5300	93	4970	94	4660	94	4360	96	107	30	88	5900	90	4910	91	4600	92	4310	92	4030	94	105
34	91	6680	93	5560	94	5220	94	4890	95	4580	96	107	34	89	6180	91	5140	91	4830	92	4520	92	4230	94	105

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	86	3580	86	2780	86	2540	86	2320	86	2120	93	105	-35	86	3530	86	2750	86	2520	86	2310	86	2100	91	104	-35	86	3530	86	2750									
-30	84	3580	84	2780	84	2550	85	2360	86	2200	93	105	-30	85	3540	85	2760	85	2530	85	2310	85	2110	91	104	-30	85	3540	85	2760									
-25	83	3590	83	2800	84	2620	85	2450	86	2280	93	105	-25	84	3550	84	2760	84	2530	84	2310	84	2120	91	103	-25	84	3550	84	2760									
-20	82	3600	84	2900	84	2710	85	2530	86	2360	93	104	-20	82	3550	82	2760	82	2530	83	2360	84	2200	91	103	-20	82	3550	82	2760									
-15	81	3630	84	3000	85	2810	85	2620	86	2450	92	104	-15	81	3550	82	2800	83	2620	83	2450	84	2280	90	103	-15	81	3550	82	2800									
-10	82	3750	84	3110	85	2910	86	2720	86	2540	92	104	-10	80	3550	82	2900	83	2710	84	2530	84	2360	90	102	-10	80	3550	82	2900									
-5	82	3890	84	3220	85	3010	86	2820	87	2630	92	104	-5	80	3630	82	3000	83	2810	84	2620	85	2450	90	102	-5	80	3630	82	3000									
0	82	4030	85	3340	85	3130	86	2930	87	2730	92	103	0	80	3760	83	3120	83	2920	84	2730	85	2540	90	102	0	80	3760	83	3120									
5	83	4190	85	3480	86	3260	87	3040	87	2840	92	103	5	81	3900	83	3230	84	3030	84	2830	85	2640	90	101	5	81	3900	83	3230									
10	83	4390	86	3650	86	3420	87	3200	88	2980	92	103	10	81	4070	83	3380	84	3160	85	2960	85	2760	90	101	10	81	4070	83	3380									
15	84	4620	86	3840	87	3600	88	3370	88	3140	92	103	15	82	4280	84	3550	85	3330	85	3110	86	2900	90	101	15	82	4280	84	3550									
20	85	4870	87	4050	88	3800	88	3550	89	3320	92	103	20	83	4510	85	3740	85	3510	86	3280	87	3060	90	101	20	83	4510	85	3740									
25	86	5150	88	4280	88	4010	89	3760	89	3510	92	103	25	83	4760	85	3950	86	3710	87	3470	87	3240	90	101	25	83	4760	85	3950									
30	86	5450	88	4530	89	4250	89	3980	90	3720	92	103	30	84	5040	86	4190	87	3920	87	3670	88	3430	90	101	30	84	5040	86	4190									
34	87	5710	89	4750	89	4460	90	4170	90	3900	92	103	34	85	5270	86	4380	87	4110	88	3850	88	3590	90	101	34	85	5270	86	4380									

WEIGHT = 11500 LBS									VENR = 160 KIAS									WEIGHT = 11000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR V2 KIAS												
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS														
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST															
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-35	86	3500	86	2730	86	2500	86	2290	86	2090	92 105	-35	86	3460	86	2710	86	2490	86	2280	86	2080	92 106												
-30	85	3500	85	2730	85	2510	85	2290	85	2090	90 104	-30	85	3470	85	2710	85	2490	85	2280	85	2080	91 105												
-25	84	3500	84	2730	84	2510	84	2290	84	2090	89 102	-25	84	3470	84	2710	84	2490	84	2280	84	2080	90 103												
-20	83	3510	83	2740	83	2510	83	2300	83	2100	89 102	-20	83	3470	83	2710	83	2490	83	2280	83	2080	88 102												
-15	82	3510	82	2740	82	2510	82	2300	82	2120	88 101	-15	82	3470	82	2710	82	2490	82	2280	82	2080	87 100												
-10	80	3500	80	2730	81	2520	81	2350	82	2190	88 101	-10	81	3460	81	2700	81	2480	81	2270	81	2070	86 99												
-5	79	3500	80	2790	81	2610	82	2440	82	2270	88 101	-5	79	3450	79	2700	79	2480	79	2270	80	2100	86 99												
0	78	3500	80	2900	81	2710	82	2530	83	2360	88 100	0	78	3440	78	2690	79	2510	80	2340	80	2180	86 99												
5	78	3630	81	3010	81	2810	82	2630	83	2450	88 100	5	77	3430	78	2780	79	2600	80	2430	80	2260	86 98												
10	79	3780	81	3140	82	2940	82	2740	83	2560	88 100	10	76	3510	79	2900	79	2720	80	2540	81	2360	86 98												
15	79	3960	82	3280	82	3070	83	2870	84	2670	88 99	15	77	3670	79	3030	80	2840	81	2650	81	2470	86 97												
20	80	4160	82	3450	83	3230	84	3020	84	2820	88 99	20	78	3830	80	3180	80	2970	81	2780	82	2590	86 97												
25	81	4390	83	3650	84	3420	84	3190	85	2980	88 99	25	78	4040	80	3350	81	3140	82	2930	82	2730	86 97												
30	82	4640	84	3850	84	3610	85	3380	85	3150	88 99	30	79	4270	81	3540	82	3310	82	3100	83	2890	86 97												
34	82	4860	84	4030	85	3780	85	3540	86	3300	88 99	34	80	4460	82	3700	82	3470	83	3240	83	3020	86 97												

Figure 4-18 (Sheet 22 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
11,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2														
	10 KTS	V1	DIST	V1	DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1				DIST	V1	DIST	10 KTS	20 KTS	30 KTS																				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																
-35	95	5500	98	4560	99	4280	100	4000	101	3740	106	116	-35	94	5300	97	4390	98	4120	99	3850	100	3600	105	115														
-30	95	5720	99	4750	99	4450	100	4170	101	3900	106	116	-30	94	5510	97	4570	98	4290	99	4010	100	3750	105	115														
-25	96	5960	99	4950	100	4640	101	4340	101	4060	106	116	-25	95	5730	98	4760	99	4460	99	4180	100	3910	105	115														
-20	96	6200	99	5160	100	4840	101	4530	102	4240	106	116	-20	95	5970	98	4960	99	4650	100	4360	100	4070	105	115														
-15	96	6470	99	5380	100	5040	101	4720	102	4420	106	116	-15	95	6220	98	5170	99	4850	100	4540	101	4250	105	115														
-10	96	6790	99	5610	100	5260	101	4930	102	4610	106	116	-10	95	6480	98	5390	99	5060	100	4740	101	4430	105	115														
-5	95	7230	100	5850	101	5490	101	5150	102	4820	106	116	-5	96	6760	99	5630	100	5280	100	4950	101	4630	105	115														
0	94	7700	100	6120	101	5750	102	5390	103	5050	106	116	0	95	7190	99	5880	100	5520	101	5180	101	4840	105	115														
5	93	8240	100	6420	101	6020	102	5650	103	5290	106	116	5	94	7680	99	6160	100	5780	101	5420	102	5070	105	115														
10	92	8940	101	6790	102	6370	103	5970	103	5590	106	116	10	93	8340	100	6510	101	6110	101	5730	102	5370	105	115														
13	91	9410	101	7030	102	6600	103	6180	103	5790	106	116	15	92	9070	100	6800	101	6480	102	6070	103	5680	105	115														
15	91	9740	101	7200	102	6750	103	6330	104	5930	106	116	16	92	9240	101	6980	101	6550	102	6140	103	5750	105	115														
16	91	9920	102	7290	102	6840	103	6410	104	6000	106	116	20	91	9940	101	7340	102	6890	102	6450	103	6040	105	115														

WEIGHT = 15500 LBS									VENR = 160 KIAS									WEIGHT = 15000 LBS									VENR = 160 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR	V2									
	10 KTS	V1	DIST	V1	DIST	10 KTS	20 KTS				30 KTS	10 KTS	V1	DIST	V1	DIST	10 KTS				20 KTS	30 KTS	10 KTS	V1	DIST	V1	DIST			10 KTS	20 KTS	30 KTS	10 KTS	V1	DIST	V1	DIST	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	92	4970	95	4120	96	3860	97	3610	98	3380	104	114	-35	90	4660	93	3870	94	3620	95	3390	96	3160	102	112	-35	90	4660	93	3870	94	3620	95	3390	96	3160	102	112
-30	93	5170	96	4290	97	4020	97	3760	98	3510	104	114	-30	91	4840	94	4020	95	3770	96	3520	96	3290	102	112	-30	91	4840	94	4020	95	3770	96	3520	96	3290	102	112
-25	93	5370	96	4460	97	4180	98	3920	98	3660	104	114	-25	91	5040	94	4180	95	3920	96	3670	96	3430	102	112	-25	91	5040	94	4180	95	3920	96	3670	96	3430	102	112
-20	93	5590	96	4650	97	4360	98	4080	99	3820	104	114	-20	91	5240	94	4350	95	4080	96	3820	97	3570	102	112	-20	91	5240	94	4350	95	4080	96	3820	97	3570	102	112
-15	93	5820	96	4840	97	4540	98	4250	99	3980	104	114	-15	92	5450	95	4530	96	4250	96	3980	97	3720	102	112	-15	92	5450	95	4530	96	4250	96	3980	97	3720	102	112
-10	94	6060	97	5040	98	4730	98	4430	99	4150	104	114	-10	92	5670	95	4720	96	4420	96	4140	97	3880	102	112	-10	92	5670	95	4720	96	4420	96	4140	97	3880	102	112
-5	94	6320	97	5260	98	4940	99	4630	99	4330	104	114	-5	92	5910	95	4920	96	4610	97	4320	97	4040	102	112	-5	92	5910	95	4920	96	4610	97	4320	97	4040	102	112
0	94	6600	97	5500	98	5160	99	4830	100	4520	104	114	0	93	6160	95	5130	96	4820	97	4510	98	4220	102	112	0	93	6160	95	5130	96	4820	97	4510	98	4220	102	112
5	95	6910	98	5750	98	5400	99	5060	100	4740	104	114	5	93	6440	96	5370	97	5040	97	4720	98	4420	102	112	5	93	6440	96	5370	97	5040	97	4720	98	4420	102	112
10	95	7360	98	6070	99	5700	100	5350	100	5010	104	114	10	94	6800	96	5660	97	5320	98	4980	98	4670	102	112	10	94	6800	96	5660	97	5320	98	4980	98	4670	102	112
15	94	8000	99	6430	99	6030	100	5660	101	5300	104	114	15	94	7190	97	5990	98	5620	98	5270	99	4940	102	112	15	94	7190	97	5990	98	5620	98	5270	99	4940	102	112
20	93	8750	99	6830	100	6410	101	6010	101	5630	104	114	20	95	7640	97	6350	98	5960	99	5590	99	5230	102	112	20	95	7640	97	6350	98	5960	99	5590	99	5230	102	112
23	93	9260	100	7090	100	6650	101	6240	102	5840	103	114	23	94	8070	98	6590	99	6180	99	5800	100	5430	102	112	23	94	8070	98	6590	99	6180	99	5800	100	5430	102	112
													25	94	8380	98	6760	99	6340	99	5940	100	5570	102	112	25	94	8380	98	6760	99	6340	99	5940	100	5570	102	112
													27	94	8720	98	6930	99	6500	100	6100	100	5710	102	112	27	94	8720	98	6930	99	6500	100	6100	100	5710	102	112

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS							10 KTS	20 KTS	30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1

Figure 4-18 (Sheet 23 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
11,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS								VR KIAS	V2 KIAS	TEMP DEG C	TAILWIND		ZERO		HEADWINDS								VR KIAS	V2 KIAS										
	10 KTS		WIND		10 KTS		20 KTS		30 KTS		10 KTS					WIND		10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT														
-35	85	3850	87	3190	88	2980	89	2790	90	2600	96	107	-35	83	3640	85	2980	86	2790	87	2610	88	2430	94	106														
-30	85	3980	88	3300	89	3090	90	2880	91	2690	96	107	-30	83	3730	86	3090	87	2890	88	2700	89	2520	94	106														
-25	85	4120	88	3420	89	3200	90	2990	90	2790	96	107	-25	83	3860	86	3200	87	3000	87	2800	88	2610	94	106														
-20	86	4270	88	3540	89	3320	90	3100	91	2900	96	107	-20	84	4000	86	3310	87	3100	88	2900	88	2710	94	105														
-15	86	4440	88	3680	89	3450	90	3230	91	3020	96	107	-15	84	4140	86	3430	87	3220	88	3010	89	2810	94	105														
-10	86	4610	89	3830	90	3590	90	3360	91	3140	96	107	-10	84	4290	87	3560	87	3340	88	3120	89	2920	94	105														
-5	87	4790	89	3990	90	3740	91	3500	91	3270	96	107	-5	85	4460	87	3710	88	3470	89	3250	89	3040	94	105														
0	87	4990	90	4150	90	3890	91	3650	92	3410	96	107	0	85	4640	87	3860	88	3620	89	3390	90	3170	94	105														
5	87	5210	90	4330	91	4070	91	3810	92	3560	96	107	5	85	4840	88	4030	89	3780	89	3540	90	3310	94	105														
10	88	5480	90	4560	91	4280	92	4010	92	3750	96	107	10	86	5090	88	4230	89	3970	90	3720	90	3480	94	105														
15	89	5770	91	4810	92	4510	92	4230	93	3960	96	107	15	87	5350	89	4460	90	4180	90	3920	91	3670	94	105														
20	89	6100	92	5090	92	4770	93	4470	93	4190	96	107	20	87	5660	90	4710	90	4420	91	4140	91	3880	94	105														
25	90	6470	92	5390	93	5060	93	4750	94	4450	96	107	25	88	5990	90	4990	91	4680	91	4390	92	4110	94	105														
30	91	6870	93	5720	93	5370	94	5040	94	4720	96	107	30	89	6350	91	5300	91	4970	92	4660	92	4360	94	105														
32	91	7040	93	5860	94	5500	94	5160	95	4830	96	107	32	89	6500	91	5420	92	5090	92	4770	93	4470	94	105														

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						TEMP DEG C	TAILWIND		ZERO		HEADWINDS									
	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS		20 KTS		30 KTS			10 KTS	V1 DIST	WIND	V1 DIST	10 KTS		20 KTS		30 KTS					
					KIAS	FT	KIAS	FT	KIAS	FT						KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	83	3590	83	2790	84	2610	85	2440	86	2270	93	105	-35	84	3550	84	2760	84	2530	84	2310	84	2110	91	103
-30	82	3600	84	2890	84	2700	85	2520	86	2350	93	104	-30	83	3550	83	2770	83	2540	83	2350	84	2190	91	103
-25	81	3610	84	2990	85	2800	85	2610	86	2440	92	104	-25	81	3560	82	2790	82	2610	83	2440	84	2270	91	103
-20	81	3740	84	3100	85	2900	86	2710	86	2530	92	104	-20	80	3570	82	2890	83	2700	83	2520	84	2350	90	102
-15	82	3870	84	3210	85	3000	86	2810	87	2620	92	104	-15	80	3610	82	2990	83	2800	84	2610	84	2440	90	102
-10	82	4000	85	3320	85	3110	86	2910	87	2710	92	103	-10	80	3730	82	3100	83	2900	84	2710	85	2530	90	102
-5	82	4150	85	3440	86	3220	86	3020	87	2810	92	103	-5	80	3870	83	3210	83	3010	84	2810	85	2620	90	102
0	83	4310	85	3580	86	3360	87	3140	87	2930	92	103	0	81	4010	83	3320	84	3110	84	2910	85	2720	90	101
5	83	4490	86	3730	86	3500	87	3280	88	3060	92	103	5	81	4160	83	3460	84	3240	85	3030	85	2830	90	101
10	84	4720	86	3920	87	3680	88	3440	88	3220	92	103	10	82	4370	84	3630	85	3400	85	3180	86	2970	90	101
15	85	4960	87	4130	87	3870	88	3630	89	3390	92	103	15	82	4590	84	3820	85	3580	86	3350	86	3130	90	101
20	85	5240	87	4360	88	4090	89	3830	89	3580	92	103	20	83	4840	85	4030	86	3780	86	3540	87	3300	90	101
25	86	5540	88	4610	89	4330	89	4050	90	3790	92	103	25	84	5120	86	4260	86	3990	87	3740	87	3490	90	101
30	87	5870	89	4890	89	4590	90	4300	90	4020	92	103	30	85	5410	86	4510	87	4230	87	3960	88	3700	90	101
32	87	6010	89	5010	89	4700	90	4400	90	4120	92	103	32	85	5540	87	4610	87	4330	88	4050	88	3790	90	101

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-35	84	3500	84	2730	84	2510	84	2290	84	2090	89	102	-35	84	3470	84	2710	84	2490	84	2280	84	2080	90	103														
-30	83	3510	83	2740	83	2510	83	2300	83	2100	89	102	-30	83	3470	83	2710	83	2490	83	2280	83	2080	89	102														
-25	82	3520	82	2740	82	2520	82	2300	82	2110	88	101	-25	82	3470	82	2720	82	2490	82	2280	82	2090	87	101														
-20	81	3520	81	2750	81	2520	81	2350	82	2180	88	101	-20	81	3480	81	2720	81	2490	81	2280	81	2080	86	99														
-15	79	3520	80	2780	81	2600	81	2430	82	2260	88	101	-15	80	3480	80	2720	80	2490	80	2280	80	2090	86	99														
-10	78	3520	80	2880	81	2690	82	2520	82	2340	88	100	-10	79	3470	79	2720	79	2500	79	2330	80	2170	86	99														
-5	78	3600	80	2980	81	2790	82	2610	83	2430	88	100	-5	77	3470	78	2760	79	2580	80	2410	80	2250	86	99														
0	78	3730	81	3090	81	2890	82	2700	83	2520	88	100	0	76	3460	78	2860	79	2680	80	2500	81	2330	86	98														
5	79	3870	81	3210	82	3010	82	2810	83	2620	88	99	5	76	3580	79	2970	79	2780	80	2600	81	2420	86	98														
10	79	4040	82	3350	82	3140	83	2930	84	2740	88	99	10	77	3740	79	3100	80	2900	80	2710	81	2530	86	97														
15	80	4240	82	3520	83	3300	83	3090	84	2880	88	99	15	78	3900	80	3240	80	3030	81	2830	81	2650	86	97														
20	81	4470	83	3710	83	3480	84	3250	85	3040	88	99	20	78	4110	80	3410	81	3190	82	2990	82	2780	86	97														
25	81	4710	83	3920	84	3670	85	3440	85	3210	88	99	25	79	4330	81	3600	82	3370	82	3150	83	2940	86	97														
30	82	4990	84	4150	85	3890	85	3640	86	3400	88	99	30	80	4580	82	3800	82	3560	83	3330	83	3110	86	97														
32	83	5100	84	4240	85	3980	85	3720	86	3480	88	99	32	80	4680	82	3890	82	3640	83	3410	83	3180	86	97														

Figure 4-18 (Sheet 24 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
12.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS											WEIGHT = 16000 LBS														
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S									
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS					10 KTS	20 KTS	30 KTS								
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	VR	V2	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	VR	V2						
-35	96	5940	99	4930	100	4620	101	4330	101	4050	106	116	-35	95	5710	98	4750	99	4450	99	4160	100	3890	105	115
-30	96	6180	99	5140	100	4820	101	4510	102	4220	106	116	-30	95	5950	98	4940	99	4630	100	4340	100	4060	105	115
-25	96	6440	99	5360	100	5020	101	4710	102	4400	106	116	-25	95	6190	98	5150	99	4830	100	4530	101	4230	105	115
-20	96	6750	99	5590	100	5240	101	4910	102	4590	106	116	-20	95	6460	98	5370	99	5040	100	4720	101	4420	105	115
-15	95	7180	100	5830	101	5470	101	5120	102	4800	106	116	-15	95	6730	99	5600	99	5250	100	4930	101	4610	105	115
-10	94	7630	100	6080	101	5700	102	5350	102	5010	106	116	-10	95	7120	99	5840	100	5480	101	5140	101	4810	105	115
-5	93	8120	100	6350	101	5960	102	5590	103	5230	106	116	-5	94	7570	99	6100	100	5720	101	5360	101	5030	105	115
0	92	8660	100	6640	101	6230	102	5840	103	5470	106	116	0	93	8070	99	6370	100	5980	101	5610	102	5250	105	115
5	91	9290	101	6980	102	6550	102	6140	103	5750	106	116	5	92	8680	100	6690	101	6280	101	5890	102	5520	105	115
8	90	9770	101	7240	102	6780	103	6350	103	5950	106	116	10	91	9400	100	7080	101	6650	102	6230	102	5840	105	115
10	90	10100	101	7500	102	6930	103	6500	104	6090	106	116	11	91	9570	100	7160	101	6720	102	6300	103	5900	105	115
11	90	0	100	7630	102	7010	103	6580	104	6160	106	116	15	90	0	101	7540	102	7050	102	6610	103	6190	105	115

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S			VR V2								
					10 KTS	20 KTS	30 KTS							10 KTS	20 KTS	30 KTS									
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	93	5360	96	4450	97	4170	98	3900	98	3650	104	114	-35	91	5020	94	4170	95	3900	96	3650	96	3410	102	112
-30	93	5570	96	4630	97	4340	98	4070	99	3800	104	114	-30	91	5220	94	4330	95	4060	96	3800	97	3560	102	112
-25	93	5800	96	4820	97	4520	98	4240	99	3960	104	114	-25	92	5430	94	4510	95	4230	96	3960	97	3710	102	112
-20	94	6040	97	5030	97	4710	98	4420	99	4130	104	114	-20	92	5650	95	4700	96	4410	96	4130	97	3860	102	112
-15	94	6290	97	5240	98	4910	98	4600	99	4310	104	114	-15	92	5880	95	4890	96	4590	97	4300	97	4030	102	112
-10	94	6550	97	5460	98	5120	99	4800	99	4490	104	114	-10	93	6120	95	5100	96	4780	97	4480	98	4200	102	112
-5	95	6830	97	5690	98	5350	99	5010	100	4690	104	114	-5	93	6380	96	5310	96	4990	97	4680	98	4380	102	112
0	95	7140	98	5940	98	5580	99	5240	100	4900	104	114	0	93	6650	96	5540	97	5200	97	4880	98	4570	102	112
5	94	7670	98	6240	99	5860	100	5500	100	5150	104	114	5	94	6980	96	5820	97	5460	98	5120	98	4800	102	112
10	93	8310	99	6590	99	6190	100	5810	101	5440	104	114	10	94	7360	97	6140	97	5760	98	5400	99	5070	102	112
15	92	9050	99	6980	100	6550	100	6150	101	5760	104	114	15	94	7920	97	6490	98	6090	99	5720	99	5360	102	112
19	91	9740	99	7330	100	6880	101	6460	101	6050	103	114	19	93	8510	98	6810	98	6390	99	6000	100	5620	102	112
													20	93	8660	98	6890	98	6470	99	6070	100	5690	102	112
													23	92	9180	98	7150	99	6720	99	6300	100	5900	102	112

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S																					
					10 KTS		20 KTS		30 KTS		10 KTS							20 KTS		30 KTS																			
					V1 DIST	VR V2	V1 DIST	VR V2	V1 DIST	VR V2	V1 DIST	VR V2						V1 DIST	VR V2	V1 DIST	VR V2																		
-35	89	4700	92	3900	93	3650	94	3420	94	3190	100	110	-35	87	4390	90	3640	91	3410	92	3190	92	2980	98	109														
-30	89	4880	92	4050	93	3800	94	3560	95	3320	100	110	-30	88	4560	90	3790	91	3550	92	3320	93	3100	98	109														
-25	90	5070	93	4220	93	3950	94	3700	95	3460	100	110	-25	88	4740	91	3940	91	3690	92	3450	93	3230	98	109														
-20	90	5280	93	4390	94	4120	94	3860	95	3610	100	110	-20	88	4930	91	4100	92	3840	92	3600	93	3360	98	109														
-15	90	5490	93	4570	94	4290	95	4010	95	3760	100	110	-15	88	5120	91	4260	92	4000	93	3740	93	3500	98	109														
-10	91	5710	93	4750	94	4460	95	4180	96	3910	100	110	-10	89	5320	91	4430	92	4160	93	3900	94	3640	98	109														
-5	91	5950	94	4950	94	4650	95	4360	96	4080	100	110	-5	89	5540	92	4610	92	4330	93	4060	94	3800	98	108														
0	91	6190	94	5170	95	4850	95	4550	96	4260	100	110	0	90	5770	92	4810	93	4510	93	4230	94	3960	98	108														
5	92	6490	94	5420	95	5090	96	4770	96	4460	100	110	5	90	6040	92	5040	93	4730	94	4430	94	4150	98	108														
10	92	6850	95	5710	96	5360	96	5030	97	4710	100	110	10	91	6360	93	5300	94	4980	94	4670	95	4370	98	108														
15	93	7230	95	6030	96	5660	97	5310	97	4980	100	110	15	91	6710	93	5600	94	5260	95	4930	95	4620	98	108														
20	94	7670	96	6400	97	6010	97	5630	98	5280	100	110	20	92	7120	94	5930	95	5570	95	5230	96	4900	98	108														
23	94	7960	96	6630	97	6230	98	5840	98	5480	100	110	25	93	7550	95	6300	95	5910	96	5550	96	5200	98	108														
25	94	8220	97	6800	97	6390	98	5990	98	5610	100	110	27	93	7740	95	6450	95	6060	96	5690	96	5330	98	108														
27	94	8540	97	6970	97	6550	98	6140	98	5750	100	110	30	93	8030	95	6700	96	6290	96	5900	97	5530	98	108														

Figure 4-18 (Sheet 25 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
12.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR VZ KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR VZ KIAS		
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	85	4110	88	3400	89	3190	90	2980	90	2780	96	107	-35	83	3850	86	3190	87	2990	87	2790	88	2600	94	106
-30	85	4260	88	3530	89	3310	90	3090	90	2890	96	107	-30	83	3980	86	3300	87	3090	88	2890	88	2700	94	105
-25	86	4420	88	3670	89	3440	90	3220	91	3000	96	107	-25	84	4120	86	3420	87	3200	88	3000	89	2800	94	105
-20	86	4590	89	3820	90	3580	90	3350	91	3130	96	107	-20	84	4280	87	3550	87	3330	88	3110	89	2910	94	105
-15	86	4770	89	3970	90	3720	91	3480	91	3260	96	107	-15	84	4440	87	3690	88	3460	88	3240	89	3020	94	105
-10	87	4960	89	4130	90	3870	91	3620	92	3390	96	107	-10	85	4610	87	3830	88	3600	89	3370	89	3150	94	105
-5	87	5160	90	4290	90	4030	91	3770	92	3530	96	107	-5	85	4790	88	3990	88	3740	89	3500	90	3280	94	105
0	88	5360	90	4470	91	4200	91	3930	92	3680	96	107	0	86	4980	88	4150	89	3890	89	3650	90	3410	94	105
5	88	5620	90	4680	91	4390	92	4120	92	3850	96	107	5	86	5210	88	4340	89	4080	90	3820	90	3570	94	105
10	89	5910	91	4920	92	4620	92	4330	93	4060	96	107	10	87	5480	89	4570	89	4290	90	4020	91	3760	94	105
15	89	6220	91	5190	92	4880	93	4570	93	4280	96	107	15	87	5770	89	4810	90	4520	91	4230	91	3960	94	105
20	90	6590	92	5500	93	5160	93	4840	94	4540	96	107	20	88	6100	90	5090	91	4780	91	4480	92	4190	94	105
25	91	6980	93	5830	93	5470	94	5130	94	4810	96	107	25	89	6460	91	5390	91	5060	92	4750	92	4450	94	105
30	91	7420	93	6190	94	5820	94	5460	95	5110	96	107	30	89	6850	91	5720	92	5370	92	5040	93	4720	94	105

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	81	3610	84	2980	85	2790	85	2600	86	2430	92 104	-35	82	3560	82	2780	82	2600	83	2430	84	2260	91 103																
-30	81	3730	84	3090	85	2890	86	2700	86	2520	92 104	-30	80	3570	82	2880	83	2690	83	2520	84	2340	90 102																
-25	82	3860	84	3200	85	2990	86	2800	86	2610	92 104	-25	80	3600	82	2980	83	2790	84	2610	84	2430	90 102																
-20	82	3990	84	3310	85	3100	86	2900	87	2710	92 103	-20	80	3720	82	3090	83	2890	84	2700	85	2520	90 102																
-15	82	4130	85	3430	85	3210	86	3010	87	2810	92 103	-15	80	3850	83	3200	83	2990	84	2800	85	2610	90 102																
-10	83	4280	85	3560	86	3340	86	3120	87	2910	92 103	-10	80	3980	83	3310	84	3100	84	2900	85	2700	90 101																
-5	83	4450	85	3700	86	3470	87	3250	87	3030	92 103	-5	81	4130	83	3430	84	3210	84	3000	85	2800	90 101																
0	83	4620	86	3850	86	3610	87	3380	88	3160	92 103	0	81	4280	83	3560	84	3340	85	3120	85	2920	90 101																
5	84	4830	86	4020	87	3770	87	3530	88	3310	92 103	5	82	4470	84	3720	85	3490	85	3270	86	3050	90 101																
10	84	5070	87	4230	87	3970	88	3720	89	3480	92 103	10	82	4690	84	3910	85	3660	86	3430	86	3210	90 101																
15	85	5340	87	4450	88	4180	88	3910	89	3660	92 103	15	83	4930	85	4110	86	3860	86	3610	87	3380	90 101																
20	86	5640	88	4700	88	4410	89	4140	90	3870	92 103	20	84	5200	86	4340	86	4070	87	3810	87	3570	90 101																
25	86	5970	88	4980	89	4670	90	4380	90	4100	92 103	25	84	5500	86	4590	87	4300	87	4030	88	3770	90 101																
30	87	6330	89	5280	89	4950	90	4650	90	4350	92 103	30	85	5830	87	4860	87	4560	88	4270	88	4000	90 101																

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	82	3510	82	2740	82	2510	82	2300	82	2100	88 101	-35	82	3470	82	2720	82	2490	82	2280	82	2080	87 101																
-30	81	3520	81	2750	81	2520	81	2340	82	2180	88 101	-30	81	3480	81	2720	81	2500	81	2290	81	2090	86 99																
-25	80	3530	80	2770	81	2590	81	2420	82	2260	88 101	-25	80	3480	80	2720	80	2500	80	2290	80	2090	86 99																
-20	79	3530	80	2870	81	2690	82	2510	82	2340	88 100	-20	79	3490	79	2730	79	2500	79	2320	80	2160	86 99																
-15	78	3580	80	2970	81	2780	82	2600	82	2420	88 100	-15	78	3490	78	2750	79	2570	80	2400	80	2240	86 99																
-10	78	3710	81	3070	81	2880	82	2690	83	2510	88 100	-10	77	3490	78	2850	79	2670	80	2490	80	2320	86 98																
-5	78	3840	81	3190	82	2980	82	2790	83	2600	88 100	-5	76	3560	78	2950	79	2760	80	2580	81	2400	86 98																
0	79	3970	81	3300	82	3090	83	2890	83	2700	88 99	0	77	3680	79	3050	79	2860	80	2670	81	2490	86 98																
5	79	4130	81	3430	82	3220	83	3010	83	2810	88 99	5	77	3830	79	3180	80	2970	80	2780	81	2590	86 97																
10	80	4330	82	3600	83	3380	83	3160	84	2950	88 99	10	77	3990	80	3310	80	3100	81	2900	81	2710	86 97																
15	81	4550	83	3790	83	3550	84	3320	84	3100	88 99	15	78	4190	80	3480	81	3260	81	3050	82	2850	86 97																
20	81	4800	83	3990	84	3750	84	3510	85	3280	88 99	20	79	4410	81	3660	81	3430	82	3210	83	3000	86 97																
25	82	5070	84	4220	84	3960	85	3710	86	3470	88 99	25	80	4650	81	3870	82	3630	83	3390	83	3170	86 97																
30	83	5360	84	4460	85	4190	86	3920	86	3670	88 99	30	80	4920	82	4090	83	3840	83	3590	84	3360	86 97																

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
13.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR	V2														
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																	
					V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST																
					KIAS	FT	KIAS	FT	KIAS	FT								KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT												
-35	96	6530	99	5430	100	5090	101	4770	102	4460	106	116	-35	95	6280	98	5220	99	4900	100	4590	101	4290	105	115														
-30	96	6830	99	5660	100	5310	101	4980	102	4660	106	116	-30	95	6540	98	5440	99	5110	100	4780	101	4480	105	115														
-25	95	7270	100	5910	100	5540	101	5190	102	4870	106	116	-25	95	6820	99	5670	99	5330	100	4990	101	4670	105	115														
-20	94	7720	100	6160	101	5780	101	5420	102	5080	106	116	-20	95	7210	99	5920	100	5560	100	5210	101	4880	105	115														
-15	93	8210	100	6430	101	6040	102	5660	102	5300	106	116	-15	94	7660	99	6170	100	5800	101	5430	101	5090	105	115														
-10	92	8720	100	6710	101	6300	102	5910	103	5540	106	116	-10	93	8140	99	6440	100	6050	101	5670	102	5310	105	115														
-5	91	9300	100	7020	101	6590	102	6180	103	5790	106	116	-5	92	8680	99	6730	100	6320	101	5930	102	5560	105	115														
0	90	9910	100	7400	102	6900	102	6470	103	6060	106	116	0	91	9240	100	7040	101	6610	101	6200	102	5810	105	115														
3	89	0	100	7760	102	7120	103	6680	103	6250	106	116	5	90	9990	100	7420	101	6970	102	6540	102	6130	105	115														
5	89	0	99	8030	102	7280	103	6820	103	6390	106	116	10	89	0	99	8040	101	7360	102	6910	103	6470	105	115														

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS			TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS														
					10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS																
					V1	DIST	V1	DIST	V1	DIST									V1	DIST	V1	DIST	V1	DIST															
					V1	DIST	V1	DIST	V1	DIST									V1	DIST	V1	DIST	V1	DIST															
-35	93	5880	96	4890	97	4590	98	4300	99	4020	104	114	-35	92	5500	94	4580	95	4290	96	4020	97	3760	102	112	-35	92	5500	94	4580	95	4290	96	4020	97	3760	102	112	
-30	94	6120	97	5090	97	4780	98	4480	99	4190	104	114	-30	92	5730	95	4760	96	4470	96	4190	97	3910	102	112	-30	92	5730	95	4760	96	4470	96	4190	97	3910	102	112	
-25	94	6380	97	5310	98	4980	98	4670	99	4370	104	114	-25	92	5960	95	4960	96	4650	97	4360	97	4080	102	112	-25	92	5960	95	4960	96	4650	97	4360	97	4080	102	112	
-20	94	6640	97	5530	98	5200	99	4870	99	4560	104	114	-20	92	6200	95	5170	96	4850	97	4550	97	4250	102	112	-20	92	6200	95	5170	96	4850	97	4550	97	4250	102	112	
-15	94	6920	97	5770	98	5420	99	5080	100	4750	104	114	-15	93	6460	95	5380	96	5050	97	4740	98	4440	102	112	-15	93	6460	95	5380	96	5050	97	4740	98	4440	102	112	
-10	95	7220	97	6010	98	5650	99	5300	100	4960	104	114	-10	93	6730	96	5610	96	5270	97	4940	98	4630	102	112	-10	93	6730	96	5610	96	5270	97	4940	98	4630	102	112	
-5	94	7690	98	6280	99	5900	99	5530	100	5190	104	114	-5	93	7020	96	5850	97	5500	97	5160	98	4830	102	112	-5	93	7020	96	5850	97	5500	97	5160	98	4830	102	112	
0	93	8190	98	6560	99	6160	100	5780	100	5420	104	114	0	94	7320	96	6110	97	5740	98	5380	98	5040	102	112	0	94	7320	96	6110	97	5740	98	5380	98	5040	102	112	
5	92	8840	98	6910	99	6490	100	6090	101	5700	104	114	5	94	7760	97	6430	97	6040	98	5660	99	5310	102	112	5	94	7760	97	6430	97	6040	98	5660	99	5310	102	112	
10	91	9560	99	7290	100	6850	100	6420	101	6020	104	114	10	93	8390	97	6770	98	6360	98	5970	99	5600	102	112	10	93	8390	97	6770	98	6360	98	5970	99	5600	102	112	
14	90	10260	99	7640	100	7170	101	6730	101	6310	103	114	14	92	8980	97	7090	98	6660	99	6250	99	5860	102	112	14	92	8980	97	7090	98	6660	99	6250	99	5860	102	112	
													15	92	9150	98	7170	98	6740	99	6320	100	5930	102	112	15	92	9150	98	7170	98	6740	99	6320	100	5930	102	112	
													18	91	9660	98	7440	99	6990	99	6560	100	6150	102	112	18	91	9660	98	7440	99	6990	99	6560	100	6150	102	112	

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2			TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2														
					10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS																
					V1	DIST	V1	DIST	V1	DIST									V1	DIST	V1	DIST	V1	DIST															
					KIAS	FT	KIAS	FT	KIAS	FT									KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT										
-35	90	5140	93	4280	93	4010	94	3750	95	3510	100	110	-35	88	4810	91	3990	91	3740	92	3500	93	3270	98	109	-35	88	4810	91	3990	91	3740	92	3500	93	3270	98	109	
-30	90	5350	93	4450	94	4170	94	3910	95	3650	100	110	-30	88	4990	91	4150	92	3890	92	3640	93	3410	98	109	-30	88	4990	91	4150	92	3890	92	3640	93	3410	98	109	
-25	90	5560	93	4630	94	4350	95	4070	95	3810	100	110	-25	88	5190	91	4320	92	4050	93	3790	93	3550	98	109	-25	88	5190	91	4320	92	4050	93	3790	93	3550	98	109	
-20	91	5790	93	4820	94	4520	95	4240	96	3970	100	110	-20	89	5400	91	4490	92	4220	93	3950	94	3700	98	109	-20	89	5400	91	4490	92	4220	93	3950	94	3700	98	109	
-15	91	6030	94	5020	94	4710	95	4420	96	4130	100	110	-15	89	5610	92	4680	92	4390	93	4110	94	3850	98	108	-15	89	5610	92	4680	92	4390	93	4110	94	3850	98	108	
-10	91	6270	94	5230	95	4910	95	4600	96	4310	100	110	-10	89	5840	92	4870	93	4570	93	4280	94	4010	98	108	-10	89	5840	92	4870	93	4570	93	4280	94	4010	98	108	
-5	92	6530	94	5450	95	5120	96	4800	96	4500	100	110	-5	90	6080	92	5070	93	4760	94	4460	94	4180	98	108	-5	90	6080	92	5070	93	4760	94	4460	94	4180	98	108	
0	92	6810	94	5680	95	5340	96	5010	96	4690	100	110	0	90	6330	92	5290	93	4960	94	4660	94	4360	98	108	0	90	6330	92	5290	93	4960	94	4660	94	4360	98	108	
5	92	7160	95	5970	96	5610	96	5270	97	4940	100	110	5	90	6650	93	5550	94	5220	94	4890	95	4580	98	108	5	90	6650	93	5550	94	5220	94	4890	95	4580	98	108	
10	93	7540	95	6290	96	5910	97	5550	97	5200	100	110	10	91	6990	93	5840	94	5480	95	5150	95	4830	98	108	10	91	6990	93	5840	94	5480	95	5150	95	4830	98	108	
15	93	7970	96	6660	96	6250	97	5870	98	5500	100	110	15	92	7390	94	6170	94	5800	95	5440	96	5100	98	108	15	92	7390	94	6170	94	5800	95	5440	96	5100	98	108	
18	93	8380	96	6900	97	6480	97	6080	98	5700	100	110	20	92	7840	94	6540	95	6150	96	5770	96	5410	98	108	20	92	7840	94	6540	95	6150	96	5770	96	5410	98	108	
20	93	8680	96	7070	97	6640	98	6230	98	5840	100	110	23	93	8130	95	6790	95	6380	96	5980	96	5610	98	108	23	93	8130	95	6790	95	6380	96	5980	96	5610	98	108	
23	92	9190	97	7330	97	6890	98	6470	98	6060	100	110	25	93	8330	95	6960	96	6540	96	6130	97	5750	98	108	25	93	8330	95	6960	96	6540	96	6130	97	5750	98	108	
													27	93	8550	95	7130	96	6700	96	6290	97	5900	98	108	27	93	8550	95	7130	96	6700	96	6290	97	5900	98	108	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
13,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	86	4480	88	3720	89	3490	90	3260	91	3050	96	107	-35	84	4180	86	3470	87	3250	88	3040	89	2840	94	105		
-30	86	4660	89	3870	89	3630	90	3390	91	3170	96	107	-30	84	4340	87	3600	87	3370	88	3150	89	2950	94	105		
-25	86	4840	89	4020	90	3770	90	3530	91	3300	96	107	-25	84	4500	87	3740	88	3510	88	3280	89	3070	94	105		
-20	87	5030	89	4180	90	3920	91	3680	91	3440	96	107	-20	85	4680	87	3890	88	3650	89	3410	89	3190	94	105		
-15	87	5220	90	4350	90	4080	91	3820	92	3580	96	107	-15	85	4860	87	4040	88	3790	89	3550	90	3320	94	105		
-10	87	5430	90	4530	91	4250	91	3980	92	3720	96	107	-10	85	5040	88	4200	88	3940	89	3690	90	3450	94	105		
-5	88	5650	90	4710	91	4420	92	4150	92	3880	96	107	-5	86	5250	88	4370	89	4100	89	3850	90	3600	94	105		
0	88	5880	90	4910	91	4610	92	4320	92	4050	96	107	0	86	5460	88	4550	89	4270	90	4010	90	3750	94	105		
5	89	6170	91	5150	92	4840	92	4540	93	4250	96	107	5	87	5720	89	4770	89	4480	90	4200	91	3940	94	105		
10	89	6480	91	5410	92	5090	93	4770	93	4470	96	107	10	87	6010	89	5010	90	4710	91	4420	91	4140	94	105		
15	90	6840	92	5710	93	5370	93	5040	94	4720	96	107	15	88	6330	90	5290	90	4970	91	4660	92	4360	94	105		
20	90	7250	92	6050	93	5690	94	5340	94	5000	96	107	20	88	6700	90	5590	91	5260	91	4930	92	4630	94	105		
25	91	7690	93	6430	94	6040	94	5670	95	5310	96	107	25	89	7100	91	5930	91	5570	92	5240	92	4900	94	105		
27	91	7890	93	6590	94	6190	94	5810	95	5450	96	107	28	89	7370	91	6150	92	5780	92	5430	93	5090	94	105		
28	91	7990	93	6670	94	6270	94	5880	95	5510	96	107															

WEIGHT = 12500 LBS										VENR = 160 KIAS				WEIGHT = 12000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		HEADWINDS						VR	V2		
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT
-35	82	3910	84	3240	85	3040	86	2840	86	2650	92	104	-35	79	3650	82	3020	83	2830	84	2640	84	2460	90	102		
-30	82	4050	84	3360	85	3140	86	2940	87	2740	92	103	-30	80	3780	82	3130	83	2930	84	2740	85	2550	90	102		
-25	82	4190	85	3480	85	3260	86	3050	87	2850	92	103	-25	80	3910	82	3240	83	3040	84	2840	85	2650	90	102		
-20	82	4340	85	3610	86	3380	86	3170	87	2960	92	103	-20	80	4040	83	3360	83	3140	84	2940	85	2750	90	101		
-15	83	4510	85	3750	86	3520	87	3290	87	3070	92	103	-15	81	4180	83	3480	84	3260	84	3050	85	2840	90	101		
-10	83	4680	86	3900	86	3650	87	3420	88	3200	92	103	-10	81	4340	83	3610	84	3380	85	3160	85	2950	90	101		
-5	84	4860	86	4050	87	3800	87	3560	88	3330	92	103	-5	81	4500	84	3750	84	3520	85	3290	86	3080	90	101		
0	84	5060	86	4220	87	3960	87	3710	88	3470	92	103	0	82	4680	84	3900	85	3660	85	3430	86	3200	90	101		
5	84	5300	87	4420	87	4150	88	3890	89	3640	92	103	5	82	4900	84	4080	85	3830	86	3590	86	3360	90	101		
10	85	5550	87	4630	88	4350	88	4080	89	3820	92	103	10	83	5130	85	4280	86	4020	86	3760	87	3520	90	101		
15	86	5850	88	4880	88	4590	89	4300	89	4030	92	103	15	83	5400	85	4510	86	4230	87	3970	87	3710	90	101		
20	86	6180	88	5170	89	4850	89	4550	90	4260	92	103	20	84	5700	86	4760	87	4470	87	4190	88	3920	90	101		
25	87	6550	89	5480	89	5140	90	4820	90	4520	92	103	25	85	6040	87	5040	87	4730	88	4440	88	4150	90	101		
28	87	6790	89	5670	90	5330	90	5000	91	4680	92	103	28	85	6250	87	5220	87	4900	88	4600	88	4300	90	101		

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	80	3590	80	2810	81	2630	81	2460	82	2290	88	101	-35	80	3540	80	2770	80	2540	80	2330	80	2130	86	99		
-30	79	3600	80	2910	81	2720	82	2540	82	2370	88	100	-30	79	3550	79	2780	79	2550	79	2350	80	2190	86	99		
-25	78	3630	80	3010	81	2820	82	2640	82	2460	88	100	-25	78	3560	78	2790	79	2610	79	2440	80	2270	86	99		
-20	78	3760	81	3120	81	2920	82	2730	83	2550	88	100	-20	77	3570	78	2890	79	2710	80	2530	80	2350	86	98		
-15	78	3890	81	3230	81	3030	82	2830	83	2640	88	100	-15	76	3610	78	2990	79	2800	80	2620	80	2440	86	98		
-10	79	4020	81	3340	82	3130	82	2930	83	2740	88	99	-10	76	3730	79	3090	79	2900	80	2710	81	2530	86	98		
-5	79	4170	81	3460	82	3250	83	3040	83	2830	88	99	-5	77	3860	79	3210	80	3000	80	2810	81	2620	86	98		
0	79	4320	82	3600	82	3370	83	3160	84	2950	88	99	0	77	3990	79	3320	80	3110	80	2910	81	2720	86	97		
5	80	4520	82	3760	83	3530	83	3300	84	3090	88	99	5	77	4160	80	3460	80	3240	81	3030	81	2830	86	97		
10	80	4730	83	3940	83	3700	84	3460	84	3240	88	99	10	78	4350	80	3620	81	3390	81	3180	82	2970	86	97		
15	81	4980	83	4150	84	3890	84	3650	85	3410	88	99	15	79	4570	81	3810	81	3570	82	3340	82	3120	86	97		
20	82	5250	84	4380	84	4110	85	3850	85	3600	88	99	20	79	4820	81	4010	82	3760	82	3520	83	3290	86	97		
25	82	5550	84	4630	85	4340	85	4070	86	3810	88	99	25	80	5090	82	4240	82	3980	83	3730	83	3480	86	97		
28	83	5740	85	4790	85	4500	86	4220	86	3950	88	99	28	80	5260	82	4390	83	4120	83	3860	84	3610	86	97		

Figure 4-18 (Sheet 28 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
14.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS											
TEMP		TAILWIND		ZERO		HEADWINDS			VR V2	TEMP		TAILWIND		ZERO		HEADWINDS			VR V2
DEG C	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	WIND V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS		DEG C		10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	WIND V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS				
						V1 DIST KIAS FT	V1 DIST KIAS FT								V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	95 7390	100 6010	100 5640	101 5280	102 4950	106 116		-35	96 6940	99 5770	99 5420	100 5080	101 4750	105 115					
-30	94 7850	100 6270	101 5880	101 5510	102 5160	106 116		-30	95 7320	99 6020	100 5650	100 5300	101 4960	105 115					
-25	93 8340	100 6540	101 6140	102 5760	102 5390	106 116		-25	94 7790	99 6280	100 5900	101 5530	101 5180	105 115					
-20	92 8870	100 6830	101 6410	102 6010	103 5630	106 116		-20	93 8280	99 6550	100 6150	101 5770	102 5410	105 115					
-15	91 9420	100 7130	101 6690	102 6280	103 5880	106 116		-15	92 8800	99 6840	100 6420	101 6020	102 5640	105 115					
-10	90 10030	100 7510	101 7000	102 6560	103 6150	106 116		-10	91 9370	100 7150	100 6710	101 6300	102 5900	105 115					
-5		99 8050	102 7320	102 6870	103 6440	106 116		-5	90 9990	100 7470	101 7020	101 6580	102 6170	105 115					
-4		99 8160	102 7390	102 6930	103 6500	106 116		0		99 7980	101 7360	102 6900	102 6470	105 115					
0		98 8660	102 7740	103 7210	103 6750	106 116		3		99 8380	101 7590	102 7120	103 6680	105 115					

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS																	
TEMP DEG C	TAILWIND		ZERO		HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS				VR V2						
	10 KTS		WIND		10 KTS	20 KTS	30 KTS	10 KTS				WIND		10 KTS	20 KTS	30 KTS									
	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT							
-35	94	6480	97	5400	98	5070	98	4750	99	4440	104	114	-35	92	6060	95	5050	96	4730	97	4440	97	4150	102	112
-30	94	6760	97	5630	98	5290	99	4950	99	4640	104	114	-30	92	6310	95	5260	96	4930	97	4620	97	4330	102	112
-25	94	7040	97	5870	98	5510	99	5170	100	4840	104	114	-25	93	6570	95	5480	96	5140	97	4820	98	4510	102	112
-20	95	7340	97	6120	98	5740	99	5390	100	5050	104	114	-20	93	6840	96	5710	96	5360	97	5020	98	4710	102	112
-15	94	7800	98	6380	98	5990	99	5620	100	5270	104	114	-15	93	7130	96	5950	97	5590	97	5240	98	4910	102	112
-10	93	8300	98	6660	99	6250	99	5870	100	5500	104	114	-10	93	7430	96	6200	97	5830	98	5470	98	5120	102	112
-5	92	8850	98	6960	99	6540	100	6130	100	5750	104	114	-5	93	7790	96	6470	97	6080	98	5710	98	5350	102	112
0	91	9470	98	7290	99	6840	100	6420	101	6020	104	114	0	93	8330	97	6770	97	6370	98	5970	99	5600	102	112
3	90	9900	99	7510	99	7060	100	6620	101	6210	104	114	5	92	8970	97	7120	98	6690	98	6280	99	5890	102	112
5	90	10210	99	7670	100	7200	100	6760	101	6340	104	114	8	91	9390	97	7340	98	6900	99	6480	99	6070	102	112
8			99	7910	100	7430	100	6980	101	6540	103	114	10	91	9690	97	7500	98	7050	99	6620	99	6200	102	112
													13	90	10220	98	7770	98	7310	99	6860	100	6430	102	112

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS				
			10 KTS		20 KTS						30 KTS		10 KTS			20 KTS		30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	90 5660	93 4710	94 4420	95 4140	95 3870	100 110		-35	88 5280	91 4390	92 4120	93 3860	93 3610	98 109					
-30	91 5890	93 4900	94 4600	95 4310	96 4040	100 110		-30	89 5490	91 4570	92 4290	93 4020	93 3760	98 109					
-25	91 6130	94 5110	94 4790	95 4490	96 4210	100 110		-25	89 5710	92 4760	92 4470	93 4190	94 3920	98 108					
-20	91 6380	94 5320	94 4990	95 4680	96 4380	100 110		-20	89 5940	92 4950	93 4650	93 4360	94 4080	98 108					
-15	91 6640	94 5540	95 5200	95 4880	96 4570	100 110		-15	90 6180	92 5150	93 4840	93 4540	94 4250	98 108					
-10	92 6910	94 5780	95 5420	96 5090	96 4770	100 110		-10	90 6430	92 5370	93 5040	94 4730	94 4430	98 108					
-5	92 7210	94 6020	95 5660	96 5310	97 4980	100 110		-5	90 6700	93 5590	93 5260	94 4930	95 4620	98 108					
0	92 7530	95 6290	96 5910	96 5550	97 5210	100 110		0	91 6990	93 5840	94 5490	94 5160	95 4830	98 108					
5	93 7910	95 6610	96 6210	97 5830	97 5470	100 110		5	91 7330	93 6130	94 5760	95 5410	95 5070	98 108					
10	93 8420	96 6950	96 6540	97 6140	97 5750	100 110		10	91 7710	94 6440	94 6060	95 5690	96 5330	98 108					
13	92 8880	96 7200	97 6770	97 6360	98 5960	100 110		15	92 8170	94 6830	95 6420	95 6020	96 5650	98 108					
15	92 9210	96 7380	97 6930	97 6510	98 6100	100 110		18	92 8460	95 7070	95 6650	96 6240	96 5850	98 108					
18	91 9730	96 7650	97 7190	98 6750	98 6330	100 110		20	93 8670	95 7250	95 6810	96 6400	96 6000	98 108					
								23	92 9170	95 7520	96 7070	96 6640	97 6230	98 108					

Figure 4-18 (Sheet 29 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
14,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S											
	10 KTS		WIND		10 KTS	20 KTS	30 KTS	10 KTS			WIND		10 KTS	20 KTS	30 KTS										
	V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST	V1 DIST		V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR V2 KIAS								
-35	86	4920	89	4090	90	3840	90	3590	91	3360	96	107	-35	84	4580	87	3810	88	3570	88	3340	89	3120	94	105
-30	87	5110	89	4260	90	3990	91	3740	91	3500	96	107	-30	85	4760	87	3960	88	3710	89	3470	89	3250	94	105
-25	87	5310	89	4430	90	4150	91	3890	92	3640	96	107	-25	85	4940	87	4110	88	3860	89	3610	89	3380	94	105
-20	87	5520	90	4600	90	4320	91	4050	92	3790	96	107	-20	85	5130	88	4280	88	4010	89	3760	90	3520	94	105
-15	88	5740	90	4790	91	4500	91	4220	92	3950	96	107	-15	86	5330	88	4440	89	4170	89	3910	90	3660	94	105
-10	88	5970	90	4980	91	4680	92	4390	92	4110	96	107	-10	86	5540	88	4620	89	4340	90	4070	90	3810	94	105
-5	88	6220	91	5190	91	4880	92	4580	93	4290	96	107	-5	86	5760	88	4810	89	4520	90	4240	90	3970	94	105
0	89	6490	91	5420	92	5090	92	4780	93	4480	96	107	0	87	6010	89	5020	89	4720	90	4430	91	4140	94	105
5	89	6800	91	5680	92	5340	93	5010	93	4700	96	107	5	87	6290	89	5260	90	4940	90	4640	91	4340	94	105
10	90	7140	92	5970	92	5610	93	5260	93	4940	96	107	10	88	6600	90	5520	90	5190	91	4870	91	4560	94	105
15	90	7550	92	6310	93	5930	93	5570	94	5230	96	107	15	88	6980	90	5830	91	5490	91	5150	92	4830	94	105
20	91	8000	93	6690	93	6290	94	5910	94	5540	96	107	20	89	7390	91	6180	91	5810	92	5450	92	5110	94	105
23	91	8300	93	6940	94	6530	94	6130	95	5750	96	107	25	89	7850	91	6560	92	6170	92	5790	93	5430	94	105
25	91	8520	93	7120	94	6690	94	6280	95	5890	96	107	26	90	7940	91	6640	92	6250	92	5860	93	5500	94	105
26	92	8630	93	7210	94	6780	94	6360	95	5970	96	107													

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2 KIAS												
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS						10 KTS	20 KTS	30 KTS															
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT														
-35	82	4260	85	3540	85	3310	86	3100	87	2890	92	103	-35	80	3970	82	3300	83	3090	84	2890	85	2690	90	102						
-30	82	4420	85	3670	86	3440	86	3220	87	3010	92	103	-30	80	4110	83	3410	83	3200	84	2990	85	2800	90	101						
-25	83	4590	85	3820	86	3580	87	3350	87	3130	92	103	-25	81	4260	83	3540	84	3320	84	3100	85	2900	90	101						
-20	83	4760	85	3960	86	3720	87	3480	88	3250	92	103	-20	81	4410	83	3670	84	3440	85	3220	85	3010	90	101						
-15	83	4940	86	4120	86	3860	87	3620	88	3390	92	103	-15	81	4580	83	3810	84	3570	85	3350	85	3130	90	101						
-10	84	5140	86	4280	87	4020	87	3770	88	3520	92	103	-10	82	4750	84	3960	84	3710	85	3480	86	3250	90	101						
-5	84	5340	86	4460	87	4180	88	3920	88	3670	92	103	-5	82	4940	84	4120	85	3860	85	3620	86	3390	90	101						
0	85	5560	87	4650	87	4360	88	4090	89	3830	92	103	0	82	5140	84	4290	85	4030	86	3770	86	3530	90	101						
5	85	5820	87	4860	88	4570	88	4280	89	4010	92	103	5	83	5370	85	4490	85	4210	86	3950	87	3700	90	101						
10	85	6100	88	5100	88	4790	89	4490	89	4210	92	103	10	83	5630	85	4700	86	4410	86	4140	87	3880	90	101						
15	86	6440	88	5380	89	5060	89	4750	90	4450	92	103	15	84	5930	86	4960	86	4660	87	4370	88	4090	90	101						
20	87	6810	89	5690	89	5350	90	5030	90	4710	92	103	20	85	6270	86	5250	87	4920	87	4620	88	4330	90	101						
25	87	7220	89	6040	90	5680	90	5340	91	5000	92	103	25	85	6650	87	5560	87	5220	88	4900	88	4600	90	101						
26	88	7310	89	6120	90	5750	90	5400	91	5060	92	103	26	85	6730	87	5620	88	5280	88	4960	89	4650	90	101						

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-35	78 3700	80 3070	81 2870	82 2680	82 2500	88 100		-35	78 3630	78 2840	79 2660	79 2480	80 2310	86 99																	
-30	78 3830	80 3170	81 2970	82 2780	83 2590	88 100		-30	77 3640	78 2940	79 2750	80 2570	80 2400	86 98																	
-25	78 3960	81 3290	81 3080	82 2880	83 2690	88 100		-25	76 3670	78 3040	79 2850	80 2660	80 2480	86 98																	
-20	79 4090	81 3400	82 3190	82 2980	83 2790	88 99		-20	76 3800	79 3150	79 2950	80 2760	81 2570	86 98																	
-15	79 4240	81 3520	82 3300	83 3090	83 2880	88 99		-15	77 3930	79 3260	79 3050	80 2860	81 2670	86 98																	
-10	79 4390	81 3650	82 3430	83 3210	83 2990	88 99		-10	77 4060	79 3380	80 3160	80 2960	81 2760	86 97																	
-5	80 4560	82 3800	82 3560	83 3330	84 3120	88 99		-5	77 4200	79 3490	80 3280	81 3060	81 2860	86 97																	
0	80 4740	82 3950	83 3710	83 3470	84 3250	88 99		0	78 4360	80 3630	80 3400	81 3190	82 2980	86 97																	
5	80 4950	83 4130	83 3880	84 3630	84 3400	88 99		5	78 4550	80 3790	81 3560	81 3330	82 3110	86 97																	
10	81 5180	83 4320	84 4060	84 3810	85 3560	88 99		10	79 4760	81 3970	81 3720	82 3490	82 3260	86 97																	
15	82 5460	84 4560	84 4280	85 4010	85 3760	88 99		15	79 5010	81 4180	82 3920	82 3670	83 3440	86 97																	
20	82 5760	84 4810	85 4520	85 4240	86 3970	88 99		20	80 5280	82 4410	82 4140	83 3880	83 3630	86 97																	
25	83 6100	85 5100	85 4790	86 4490	86 4210	88 99		25	81 5590	82 4660	83 4380	83 4110	84 3840	86 97																	
26	83 6170	85 5160	85 4850	86 4550	86 4260	88 99		26	81 5650	82 4720	83 4430	83 4150	84 3890	86 97																	

Figure 4-18 (Sheet 30 of 30)



TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 15°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure 4-20 and correct for runway gradient and anti-icing requirements using the tables below. If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 15°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT				
RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1^*	MULTIPLY DISTANCE BY	V_1^*	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.7 * *	ADD 4 KNOTS	1.7 * *
1% UPHILL	ADD 2 KNOTS	1.2	ADD 2 KNOTS	1.2
1% DOWNHILL	SUBTRACT 3 KNOTS	1.0	ADD 1 KNOT	1.02
2% DOWNHILL	SUBTRACT 6 KNOTS	1.0	ADD 1 KNOT	1.05

CORRECTION FACTORS - ANTI-ICE ON	
V_1^* - KIAS	ADD 1 KNOT
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.10

* If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .

* * Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 7000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure 4-20, the Takeoff Field Length is 3600.

V_1 is 97 KNOTS
 V_R is 102 KNOTS
 V_2 is 112 KNOTS
 V_{ENR} is 160 KNOTS

Figure 4-19

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S									
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2	10 KTS	V1 DIST		10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS		FT	KIAS	FT	KIAS	FT		KIAS	FT						
-25	92	3400	95	2750	95	2560	96	2370	97	2180	102	112	-25	91	3280	93	2660	94	2470	95	2280	96	2110	101	111
-20	92	3460	94	2810	95	2610	96	2410	97	2230	102	112	-20	90	3340	93	2710	94	2520	95	2330	96	2150	101	111
-15	91	3520	94	2850	95	2660	96	2460	97	2280	102	112	-15	90	3400	93	2760	94	2570	95	2380	96	2200	101	111
-10	91	3580	94	2910	95	2700	96	2510	97	2320	102	112	-10	90	3460	93	2810	94	2610	95	2420	96	2240	101	111
-5	91	3640	94	2960	95	2750	96	2560	97	2370	102	112	-5	90	3520	93	2860	94	2660	95	2470	96	2290	101	111
0	91	3700	94	3020	95	2810	96	2610	97	2420	102	112	0	90	3580	93	2920	94	2710	95	2520	96	2330	101	111
5	91	3760	94	3070	95	2860	96	2660	97	2460	102	112	5	90	3640	93	2970	94	2760	95	2570	96	2380	101	111
10	91	3830	94	3130	95	2910	96	2710	97	2510	102	112	10	90	3700	93	3020	94	2810	95	2620	96	2430	101	111
15	91	3890	94	3180	95	2970	96	2760	97	2560	102	112	15	90	3760	93	3070	94	2860	95	2670	96	2470	101	111
20	91	3990	94	3260	95	3040	96	2830	97	2630	102	112	20	90	3850	93	3150	94	2940	95	2730	96	2530	101	111
25	91	4080	94	3350	95	3120	96	2900	97	2700	102	112	25	90	3940	93	3230	94	3010	95	2800	96	2600	101	111
30	92	4280	95	3510	95	3270	96	3050	97	2830	102	112	30	91	4130	93	3390	94	3160	95	2940	96	2730	101	111
35	93	4530	95	3710	96	3460	97	3230	98	3000	102	112	35	92	4370	94	3580	95	3340	96	3110	97	2890	101	111
40	94	4810	96	3940	97	3680	98	3420	98	3180	102	112	40	92	4640	95	3800	96	3540	97	3300	97	3070	101	111
45	95	5120	97	4200	98	3910	98	3640	99	3390	102	112	45	93	4940	96	4040	97	3770	97	3510	98	3260	101	111
50	96	5470	98	4480	98	4180	99	3890	100	3610	102	112	50	94	5270	97	4310	97	4020	98	3740	99	3480	101	111
52	96	5610	98	4600	99	4290	99	3990	100	3710	102	112	53	95	5480	97	4480	98	4180	98	3900	99	3620	101	111
53	96	5690	98	4660	99	4340	100	4050	100	3760	102	112	54	95	5550	97	4540	98	4240	99	3950	99	3670	101	111

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2								
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS														
	V1 DIST	VR V2	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			VR V2	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST													
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS										
-25	89	3100	91	2510	92	2330	93	2160	94	1990	99	110	-25	88	3000	90	2370	90	2200	91	2040	92	1880	98	108						
-20	88	3160	91	2560	92	2370	93	2200	94	2030	99	110	-20	88	3060	90	2420	90	2240	91	2080	92	1920	98	108						
-15	88	3210	91	2600	92	2420	93	2240	94	2070	99	110	-15	88	3120	89	2460	90	2290	91	2120	92	1950	98	108						
-10	88	3270	91	2650	92	2460	93	2280	94	2110	99	110	-10	88	3170	89	2510	90	2330	91	2160	92	1990	98	108						
-5	88	3320	91	2700	92	2510	93	2330	94	2150	99	110	-5	88	3230	89	2550	90	2370	91	2200	92	2030	98	108						
0	88	3380	91	2750	92	2560	93	2370	93	2200	99	110	0	87	3280	89	2600	90	2420	91	2240	92	2070	98	108						
5	88	3430	91	2800	92	2600	93	2420	93	2240	99	110	5	87	3340	89	2650	90	2460	91	2280	91	2110	98	108						
10	88	3490	91	2850	92	2650	92	2460	93	2280	99	110	10	87	3390	89	2690	90	2510	91	2330	91	2150	98	108						
15	88	3550	91	2900	91	2700	92	2510	93	2320	99	110	15	87	3450	89	2740	90	2550	90	2370	91	2190	98	108						
20	88	3630	91	2970	92	2770	92	2570	93	2390	99	110	20	87	3480	89	2800	90	2610	91	2430	91	2250	98	108						
25	88	3720	91	3040	92	2840	92	2640	93	2450	99	110	25	86	3510	89	2870	90	2670	91	2480	91	2300	98	108						
30	89	3890	92	3190	92	2970	93	2760	94	2570	99	110	30	87	3660	89	3000	90	2800	91	2600	92	2410	98	108						
35	90	4110	92	3370	93	3140	94	2920	95	2710	99	110	35	88	3870	90	3170	91	2950	92	2740	93	2550	98	108						
40	91	4360	93	3570	94	3330	95	3100	95	2880	99	110	40	89	4100	91	3350	92	3130	93	2910	93	2700	98	108						
45	92	4640	94	3800	95	3540	95	3300	96	3060	99	110	45	90	4350	92	3560	93	3320	94	3090	94	2870	97	108						
50	93	4940	95	4050	96	3770	96	3510	97	3260	99	110	50	91	4640	93	3790	94	3540	94	3290	95	3060	97	108						
54	93	5210	95	4260	96	3970	97	3700	97	3430	99	109	54	91	4880	94	3990	94	3720	95	3460	95	3210	97	108						

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	
-25	88 2980	88 2260	89 2080	89 1920	90 1770	96 107			-25	88 2950	88 2250	88 2040	88 1850	88 1670	94 106				
-20	88 3030	88 2300	89 2120	89 1960	90 1810	96 107			-20	88 3010	88 2290	88 2080	88 1890	88 1700	94 106				
-15	88 3090	88 2350	88 2160	89 2000	90 1840	96 107			-15	88 3060	88 2330	88 2120	88 1920	88 1740	94 106				
-10	88 3140	88 2390	88 2200	89 2040	90 1880	96 107			-10	88 3120	88 2380	88 2160	88 1960	88 1770	94 106				
-5	88 3200	88 2440	88 2240	89 2070	90 1920	96 107			-5	88 3170	88 2420	88 2210	88 2000	88 1810	94 106				
0	88 3250	88 2480	88 2280	89 2110	90 1950	96 107			0	88 3220	88 2470	88 2240	88 2040	88 1840	94 106				
5	88 3310	88 2520	88 2320	89 2150	90 1990	96 107			5	88 3280	88 2510	88 2280	88 2080	88 1880	94 106				
10	88 3360	88 2570	88 2360	89 2190	90 2030	96 107			10	88 3330	88 2550	88 2330	88 2110	88 1920	94 106				
15	87 3420	87 2610	88 2400	89 2230	89 2070	96 107			15	88 3380	88 2600	88 2370	88 2150	88 1950	94 106				
20	87 3440	87 2650	88 2460	89 2290	89 2120	96 107			20	87 3410	87 2620	87 2390	87 2170	88 1990	94 106				
25	86 3470	87 2700	88 2520	89 2340	90 2170	96 107			25	87 3440	87 2640	87 2410	87 2200	88 2040	94 106				
30	85 3450	88 2820	88 2630	89 2440	90 2260	96 106			30	85 3390	86 2660	86 2470	87 2300	88 2130	94 105				
35	86 3640	88 2970	89 2770	90 2580	91 2390	96 106			35	84 3410	86 2790	87 2600	88 2410	89 2230	94 105				
40	87 3840	89 3150	90 2930	91 2720	91 2530	96 106			40	85 3610	87 2950	88 2750	89 2550	89 2370	94 105				
45	88 4080	90 3340	91 3110	92 2890	92 2680	96 106			45	86 3820	88 3130	89 2910	89 2710	90 2510	94 105				
50	89 4340	91 3550	92 3310	92 3080	93 2860	96 106			50	87 4060	89 3320	90 3090	90 2880	91 2670	94 105				
54	90 4560	92 3730	92 3480	93 3240	93 3000	96 106			54	87 4270	90 3490	90 3250	91 3020	91 2800	94 104				

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											VENR = 160 KIAS											WEIGHT = 13000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR VZ		TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR VZ																			
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																					
					V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT														
-25	89	2930	89	2240	89	2030	89	1840	89	1660	92 105	-25	89	2920	89	2230	89	2030	89	1840	89	1660	91 103	-25	89	2920	89	2230	89	2030	89	1840	89	1660	91 103								
-20	89	2990	89	2280	89	2070	89	1880	89	1700	92 105	-20	89	2970	89	2270	89	2070	89	1880	89	1700	91 103	-20	89	2970	89	2270	89	2070	89	1880	89	1700	91 103								
-15	88	3040	88	2320	88	2110	88	1920	88	1730	92 105	-15	89	3020	89	2320	89	2110	89	1910	89	1730	91 103	-15	89	3020	89	2320	89	2110	89	1910	89	1730	91 103								
-10	88	3100	88	2370	88	2160	88	1960	88	1770	92 105	-10	89	3080	89	2360	89	2150	89	1950	89	1770	91 103	-10	89	3080	89	2360	89	2150	89	1950	89	1770	91 103								
-5	88	3150	88	2410	88	2200	88	1990	88	1800	92 105	-5	89	3130	89	2400	89	2190	89	1990	89	1800	91 103	-5	89	3130	89	2400	89	2190	89	1990	89	1800	91 103								
0	88	3200	88	2450	88	2230	88	2030	88	1840	92 105	0	88	3180	88	2440	88	2230	88	2030	88	1840	91 103	0	88	3180	88	2440	88	2230	88	2030	88	1840	91 103								
5	88	3250	88	2490	88	2270	88	2070	88	1870	92 105	5	88	3230	88	2480	88	2270	88	2060	88	1870	91 103	5	88	3230	88	2480	88	2270	88	2060	88	1870	91 103								
10	88	3300	88	2540	88	2310	88	2110	88	1910	92 105	10	88	3280	88	2530	88	2310	88	2100	88	1910	91 103	10	88	3280	88	2530	88	2310	88	2100	88	1910	91 103								
15	88	3360	88	2580	88	2360	88	2140	88	1940	92 105	15	88	3330	88	2570	88	2350	88	2140	88	1940	91 103	15	88	3330	88	2570	88	2350	88	2140	88	1940	91 103								
20	87	3380	87	2600	87	2370	87	2160	87	1960	92 105	20	88	3360	88	2590	88	2360	88	2150	88	1960	91 103	20	88	3360	88	2590	88	2360	88	2150	88	1960	91 103								
25	87	3410	87	2620	87	2390	87	2180	87	1980	92 104	25	87	3380	87	2610	87	2380	87	2170	87	1970	91 103	25	87	3380	87	2610	87	2380	87	2170	87	1970	91 103								
30	85	3350	85	2580	85	2350	85	2160	86	2000	92 104	30	85	3320	85	2560	85	2340	85	2130	85	1930	90 103	30	85	3320	85	2560	85	2340	85	2130	85	1930	90 103								
35	83	3280	84	2620	85	2440	86	2260	87	2100	92 103	35	83	3250	83	2500	83	2290	84	2120	85	1960	90 102	35	83	3250	83	2500	83	2290	84	2120	85	1960	90 102								
40	82	3380	85	2760	86	2570	86	2380	87	2210	92 103	40	81	3170	83	2580	84	2400	84	2230	85	2060	90 101	40	81	3170	83	2580	84	2400	84	2230	85	2060	90 101								
45	84	3580	86	2920	87	2720	87	2530	88	2340	92 103	45	81	3340	84	2730	84	2540	85	2350	86	2180	90 101	45	81	3340	84	2730	84	2540	85	2350	86	2180	90 101								
50	85	3800	87	3100	88	2890	88	2680	89	2490	92 103	50	82	3550	85	2900	85	2690	86	2500	87	2320	90 101	50	82	3550	85	2900	85	2690	86	2500	87	2320	90 101								
54	85	3990	88	3260	88	3030	89	2820	89	2610	92 103	54	83	3720	85	3030	86	2820	87	2630	87	2430	90 101	54	83	3720	85	3030	86	2820	87	2630	87	2430	90 101								

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS																												
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS												
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS														
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-25	89	2910	89	2230	89	2030	89	1840	89	1660	90	103	-25	90	2900	90	2230	90	2030	90	1840	90	1670	90	104	-25	90	2900	90	2230	90	2030	90	1840	90	1670	90	104
-20	89	2960	89	2270	89	2070	89	1880	89	1700	90	103	-20	89	2950	89	2270	89	2070	89	1880	89	1700	90	104	-20	89	2950	89	2270	89	2070	89	1880	89	1700	90	104
-15	89	3010	89	2310	89	2110	89	1910	89	1730	90	103	-15	89	3000	89	2310	89	2110	89	1920	89	1740	90	104	-15	89	3000	89	2310	89	2110	89	1920	89	1740	90	104
-10	89	3060	89	2350	89	2150	89	1950	89	1770	90	103	-10	89	3050	89	2350	89	2150	89	1950	89	1770	90	104	-10	89	3050	89	2350	89	2150	89	1950	89	1770	90	104
-5	89	3110	89	2400	89	2190	89	1990	89	1800	90	103	-5	89	3100	89	2390	89	2190	89	1990	89	1810	90	104	-5	89	3100	89	2390	89	2190	89	1990	89	1810	90	104
0	89	3160	89	2440	89	2220	89	2020	89	1840	90	103	0	89	3150	89	2430	89	2220	89	2030	89	1840	90	104	0	89	3150	89	2430	89	2220	89	2030	89	1840	90	104
5	89	3210	89	2480	89	2260	89	2060	89	1870	90	103	5	89	3200	89	2480	89	2260	89	2060	89	1870	90	104	5	89	3200	89	2480	89	2260	89	2060	89	1870	90	104
10	89	3260	89	2520	89	2300	89	2100	89	1900	90	103	10	89	3250	89	2520	89	2300	89	2100	89	1910	90	104	10	89	3250	89	2520	89	2300	89	2100	89	1910	90	104
15	89	3310	89	2560	89	2340	89	2130	89	1940	90	103	15	89	3300	89	2560	89	2340	89	2140	89	1940	90	104	15	89	3300	89	2560	89	2340	89	2140	89	1940	90	104
20	88	3340	88	2580	88	2360	88	2150	88	1950	89	102	20	88	3320	88	2580	88	2360	88	2150	88	1960	90	103	20	88	3320	88	2580	88	2360	88	2150	88	1960	90	103
25	87	3360	87	2600	87	2370	87	2160	87	1970	89	102	25	88	3340	88	2590	88	2370	88	2160	88	1970	89	102	25	88	3340	88	2590	88	2370	88	2160	88	1970	89	102
30	85	3300	85	2550	85	2330	85	2120	85	1930	89	101	30	86	3280	86	2540	86	2320	86	2120	86	1920	87	100	30	86	3280	86	2540	86	2320	86	2120	86	1920	87	100
35	83	3220	83	2480	83	2260	83	2060	83	1870	89	101	35	83	3190	83	2470	83	2250	83	2050	83	1860	87	99	35	83	3190	83	2470	83	2250	83	2050	83	1860	87	99
40	81	3140	81	2420	82	2250	82	2090	83	1930	88	100	40	81	3110	81	2400	81	2190	81	1990	81	1800	87	99	40	81	3110	81	2400	81	2190	81	1990	81	1800	87	99
45	79	3130	81	2550	82	2370	83	2220	84	2030	88	99	45	79	3030	79	2380	80	2210	81	2050	81	1890	86	98	45	79	3030	79	2380	80	2210	81	2050	81	1890	86	98
50	80	3310	82	2690	83	2510	84	2320	84	2150	88	99	50	78	3080	80	2510	81	2330	81	2160	82	1990	86	98	50	78	3080	80	2510	81	2330	81	2160	82	1990	86	98
54	81	3460	83	2830	84	2630	84	2440	85	2260	88	99	54	79	3220	81	2620	81	2440	82	2260	83	2090	86	97	54	79	3220	81	2620	81	2440	82	2260	83	2090	86	97

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS																
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS									
					10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-25	91	3480	94	2830	95	2630	96	2440	97	2250	102	112	-25	90	3370	93	2730	94	2540	95	2350	96	2180	101	111
-20	91	3550	94	2890	95	2680	96	2490	97	2300	102	112	-20	90	3430	93	2790	94	2590	95	2400	96	2220	101	111
-15	91	3610	94	2940	95	2740	96	2540	96	2350	102	112	-15	90	3490	93	2840	94	2640	95	2450	95	2270	101	111
-10	91	3670	94	2990	95	2780	96	2590	96	2400	102	112	-10	90	3550	93	2890	94	2690	94	2500	95	2310	101	111
-5	91	3740	94	3050	95	2840	96	2640	96	2450	102	112	-5	90	3610	93	2950	93	2740	94	2550	95	2360	101	111
0	91	3800	94	3100	95	2890	95	2690	96	2490	102	112	0	89	3670	92	3000	93	2790	94	2600	95	2410	101	111
5	90	3860	94	3160	94	2940	95	2740	96	2540	102	112	5	89	3730	92	3050	93	2840	94	2640	95	2450	101	111
10	90	3930	93	3220	94	3000	95	2790	96	2590	102	112	10	89	3790	92	3110	93	2900	94	2700	95	2500	101	111
15	90	4020	93	3300	94	3070	95	2860	96	2660	102	112	15	89	3890	92	3180	93	2970	94	2760	95	2560	101	111
20	91	4170	94	3420	95	3190	96	2970	96	2760	102	112	20	90	4020	93	3300	94	3080	94	2860	95	2660	101	111
25	91	4330	94	3560	95	3320	96	3090	97	2870	102	112	25	90	4180	93	3430	94	3200	95	2980	96	2770	101	111
30	92	4580	95	3760	96	3510	97	3270	97	3040	102	112	30	91	4420	94	3620	95	3380	96	3150	96	2930	101	111
35	93	4850	96	3980	97	3710	97	3460	98	3220	102	112	35	92	4680	95	3840	95	3580	96	3340	97	3100	101	111
40	94	5160	97	4230	97	3950	98	3680	99	3420	102	112	40	93	4970	96	4080	96	3800	97	3540	98	3290	101	111
45	95	5500	97	4510	98	4210	99	3920	99	3650	102	112	45	94	5300	96	4340	97	4050	98	3780	98	3510	101	111
48	96	5720	98	4690	99	4380	99	4080	100	3800	102	112	50	95	5650	97	4630	98	4320	98	4030	99	3750	101	111
50	96	5870	98	4810	99	4490	99	4190	100	3900	102	112	52	95	5800	97	4750	98	4440	99	4140	99	3850	101	111

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
-25	88 3180	91 2580	92 2400	93 2220	94 2050	99 110	-25	88 3130	89 2440	90 2270	91 2100	92 1940	98 109		
-20	88 3240	91 2630	92 2450	93 2270	94 2100	99 110	-20	88 3180	89 2490	90 2310	91 2140	92 1980	98 109		
-15	88 3300	91 2680	92 2490	93 2310	93 2140	99 110	-15	88 3240	89 2540	90 2360	91 2180	92 2020	98 109		
-10	88 3350	91 2730	92 2540	93 2360	93 2180	99 110	-10	88 3300	89 2580	90 2400	91 2230	91 2060	98 109		
-5	88 3410	91 2780	92 2590	92 2400	93 2220	99 110	-5	88 3360	89 2630	90 2440	91 2270	91 2100	98 109		
0	88 3470	91 2830	91 2630	92 2450	93 2270	99 110	0	88 3420	89 2670	90 2490	90 2310	91 2140	98 109		
5	88 3520	90 2880	91 2680	92 2490	93 2310	99 110	5	88 3480	89 2720	89 2530	90 2350	91 2180	98 109		
10	87 3580	90 2930	91 2730	92 2540	93 2360	99 110	10	88 3540	89 2770	89 2580	90 2400	91 2220	98 109		
15	87 3660	90 3000	91 2800	92 2600	93 2420	99 110	15	87 3570	89 2830	89 2640	90 2460	91 2280	98 108		
20	88 3790	91 3110	92 2900	92 2700	93 2510	99 110	20	86 3570	89 2930	90 2730	91 2540	91 2360	98 108		
25	88 3940	91 3230	92 3010	93 2800	94 2600	99 110	25	86 3710	89 3040	90 2830	91 2640	92 2450	98 108		
30	89 4160	92 3410	93 3180	94 2960	94 2750	99 110	30	87 3910	90 3200	91 2990	92 2780	92 2580	98 108		
35	90 4400	93 3610	94 3360	94 3130	95 2910	99 110	35	88 4130	91 3390	92 3160	92 2940	93 2730	98 108		
40	91 4670	94 3830	94 3570	95 3330	96 3090	99 110	40	89 4380	92 3590	92 3350	93 3120	94 2900	97 108		
45	92 4970	94 4070	95 3800	96 3540	96 3290	99 110	45	90 4660	93 3820	93 3560	94 3320	95 3080	97 108		
50	93 5300	95 4350	96 4050	97 3770	97 3510	99 109	50	91 4960	93 4070	94 3790	95 3530	95 3280	97 108		
52	93 5440	96 4460	96 4160	97 3880	97 3600	99 109	52	92 5090	94 4170	94 3890	95 3620	95 3370	97 108		

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-25	88 3100	88 2360	88 2140	89 1980	90 1830	96 107	-25	89 3070	89 2340	89 2130	89 1930	89 1740	94 106		
-20	88 3160	88 2400	88 2180	89 2020	90 1870	96 107	-20	89 3130	89 2390	89 2170	89 1970	89 1780	94 106		
-15	88 3210	88 2450	88 2230	89 2060	90 1900	96 107	-15	88 3190	88 2440	88 2220	88 2010	88 1820	94 106		
-10	88 3270	88 2500	88 2270	89 2100	90 1940	96 107	-10	88 3240	88 2480	88 2260	88 2050	88 1860	94 106		
-5	88 3330	88 2540	88 2320	89 2140	90 1980	96 107	-5	88 3300	88 2530	88 2300	88 2090	88 1900	94 106		
0	88 3390	88 2590	88 2360	89 2180	89 2020	96 107	0	88 3360	88 2580	88 2350	88 2130	88 1930	94 106		
5	88 3450	88 2640	88 2400	89 2220	89 2060	96 107	5	88 3420	88 2620	88 2390	88 2170	88 1970	94 106		
10	88 3500	88 2690	88 2450	88 2260	89 2090	96 107	10	88 3470	88 2670	88 2430	88 2210	88 2010	94 106		
15	87 3540	87 2710	88 2490	88 2310	89 2150	96 107	15	88 3500	88 2690	88 2460	88 2240	88 2030	94 106		
20	86 3530	87 2760	88 2570	89 2390	89 2220	96 107	20	86 3490	86 2680	86 2450	87 2250	88 2090	94 106		
25	85 3510	87 2860	88 2660	89 2480	90 2300	96 107	25	85 3470	85 2690	86 2510	87 2330	88 2160	94 105		
30	85 3670	88 3010	89 2800	90 2610	90 2420	96 106	30	83 3450	86 2820	87 2630	88 2440	88 2270	94 105		
35	86 3880	89 3180	90 2960	90 2750	91 2560	96 106	35	84 3640	87 2980	88 2770	88 2580	89 2390	94 105		
40	87 4110	90 3370	90 3140	91 2920	92 2710	96 106	40	85 3850	88 3150	88 2940	89 2730	90 2530	94 105		
45	88 4370	91 3580	91 3340	92 3100	93 2880	96 106	45	86 4090	89 3350	89 3120	90 2900	91 2690	94 105		
50	89 4650	91 3800	92 3550	93 3300	93 3070	96 106	50	87 4340	89 3560	90 3310	91 3080	91 2860	94 104		
52	90 4760	92 3900	92 3640	93 3390	94 3150	96 106	52	88 4450	90 3650	90 3400	91 3160	92 2930	94 104		

Figure 4-20 (Sheet 3 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS 10 KTS V1 DIST KIAS FT				20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT		VR V2 KIAS											
-25	89	3050	89	2330	89	2120	89	1930	89	1740	92	105	-25	89	3030	89	2330	89	2120	89	1920	89	1740	91	103
-20	89	3110	89	2380	89	2160	89	1970	89	1780	92	105	-20	89	3090	89	2370	89	2160	89	1960	89	1780	91	103
-15	89	3160	89	2420	89	2210	89	2010	89	1820	92	105	-15	89	3140	89	2410	89	2200	89	2000	89	1810	91	103
-10	89	3220	89	2470	89	2250	89	2050	89	1850	92	105	-10	89	3200	89	2460	89	2240	89	2040	89	1850	91	103
-5	89	3280	89	2520	89	2290	89	2090	89	1890	92	105	-5	89	3260	89	2510	89	2290	89	2080	89	1890	91	103
0	89	3330	89	2560	89	2340	89	2130	89	1930	92	105	0	89	3310	89	2550	89	2330	89	2120	89	1930	91	103
5	88	3390	88	2610	88	2380	88	2170	88	1970	92	105	5	89	3370	89	2600	89	2370	89	2160	89	1960	91	103
10	88	3440	88	2650	88	2420	88	2210	88	2000	92	105	10	89	3420	89	2640	89	2410	89	2200	89	2000	91	103
15	88	3470	88	2670	88	2440	88	2230	88	2020	92	105	15	88	3450	88	2660	88	2430	88	2220	88	2020	91	103
20	87	3460	87	2660	87	2430	87	2220	87	2010	92	104	20	87	3430	87	2650	87	2420	87	2210	87	2010	91	103
25	85	3440	85	2640	85	2410	85	2200	86	2030	92	104	25	86	3410	86	2630	86	2400	86	2190	86	1990	90	103
30	83	3360	84	2650	85	2470	86	2300	86	2130	92	103	30	83	3330	83	2570	83	2340	84	2150	84	1990	90	102
35	82	3410	85	2780	85	2590	86	2410	87	2230	92	103	35	81	3260	83	2610	83	2430	84	2260	85	2090	90	102
40	83	3600	85	2950	86	2750	87	2550	88	2360	92	103	40	81	3360	83	2750	84	2560	85	2380	85	2200	90	101
45	84	3820	86	3120	87	2910	88	2710	88	2510	92	103	45	82	3570	84	2920	85	2710	86	2520	86	2340	90	101
50	85	4060	87	3320	88	3090	89	2870	89	2670	92	103	50	83	3780	85	3090	86	2880	86	2670	87	2480	90	101
52	86	4160	88	3400	88	3170	89	2950	89	2730	92	103	52	83	3880	85	3170	86	2950	87	2740	87	2540	90	101

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-25	89 3020	89 2320	89 2120	89 1920	89 1740	90 104	-25	90 3010	90 2320	90 2120	90 1930	90 1750	91 104		
-20	89 3080	89 2370	89 2160	89 1960	89 1780	90 104	-20	90 3070	90 2370	90 2160	90 1970	90 1780	91 104		
-15	89 3130	89 2410	89 2200	89 2000	89 1810	90 104	-15	90 3120	90 2410	90 2200	90 2000	90 1820	91 104		
-10	89 3180	89 2450	89 2240	89 2040	89 1850	90 104	-10	90 3170	90 2450	90 2240	90 2040	90 1860	91 105		
-5	89 3240	89 2500	89 2280	89 2080	89 1890	90 104	-5	89 3230	89 2500	89 2280	89 2080	89 1890	91 104		
0	89 3290	89 2540	89 2320	89 2120	89 1930	90 104	0	89 3280	89 2540	89 2330	89 2120	89 1930	91 104		
5	89 3350	89 2590	89 2370	89 2160	89 1960	90 103	5	89 3340	89 2590	89 2370	89 2160	89 1970	91 104		
10	89 3400	89 2630	89 2410	89 2200	89 2000	90 103	10	89 3390	89 2630	89 2410	89 2200	89 2000	91 104		
15	88 3430	88 2650	88 2430	88 2210	88 2010	90 103	15	89 3410	89 2650	89 2430	89 2210	89 2020	90 104		
20	87 3410	87 2640	87 2410	87 2200	87 2000	89 102	20	87 3390	87 2630	87 2410	87 2200	87 2000	89 102		
25	86 3380	86 2610	86 2390	86 2180	86 1980	89 101	25	86 3360	86 2610	86 2380	86 2180	86 1980	87 101		
30	84 3300	84 2550	84 2330	84 2120	84 1930	89 101	30	84 3280	84 2540	84 2320	84 2110	84 1920	87 99		
35	81 3220	81 2480	81 2280	82 2110	83 1950	88 100	35	82 3200	82 2470	82 2250	82 2050	82 1860	87 99		
40	79 3150	81 2570	82 2390	83 2220	83 2050	88 100	40	79 3120	79 2400	80 2230	81 2070	81 1910	87 98		
45	80 3320	82 2710	83 2520	83 2340	84 2170	88 99	45	77 3100	80 2530	80 2350	81 2180	82 2020	86 98		
50	81 3520	83 2880	83 2680	84 2490	85 2300	88 99	50	78 3280	81 2670	81 2480	82 2300	82 2130	86 97		
52	81 3610	83 2940	84 2740	84 2550	85 2360	88 99	52	79 3360	81 2740	82 2540	82 2360	83 2180	86 97		

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																			
TEMP		TAILWIND		ZERO		H E A D W I N D S				TEMP		TAILWIND		ZERO		H E A D W I N D S											
DEG	C	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	VR	V2	DEG	C	10 KTS	V1 DIST	WIND	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	VR	V2
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25		90	3010	90	2330	90	2130	90	1940	90	1760	92	105	-25		91	3020	91	2340	91	2140	91	1950	91	1780	92	107
-20		90	3070	90	2370	90	2170	90	1970	90	1790	92	105	-20		90	3070	90	2380	90	2180	90	1990	90	1810	92	106
-15		90	3120	90	2410	90	2210	90	2010	90	1830	92	105	-15		90	3120	90	2430	90	2220	90	2030	90	1850	92	107
-10		90	3170	90	2460	90	2250	90	2050	90	1870	92	105	-10		90	3180	90	2470	90	2260	90	2070	90	1880	92	107
-5		90	3220	90	2500	90	2290	90	2090	90	1900	92	105	-5		90	3230	90	2510	90	2300	90	2100	90	1920	92	107
0		90	3280	90	2550	90	2330	90	2130	90	1940	92	105	0		90	3280	90	2560	90	2340	90	2140	90	1950	92	106
5		90	3330	90	2590	90	2370	90	2170	90	1970	92	105	5		90	3330	90	2600	90	2380	90	2180	90	1990	92	106
10		90	3380	90	2630	90	2410	90	2200	90	2010	91	105	10		90	3380	90	2640	90	2420	90	2220	90	2020	92	106
15		89	3400	89	2650	89	2430	89	2220	89	2020	91	105	15		89	3400	89	2660	89	2440	89	2230	89	2040	92	106
20		88	3380	88	2630	88	2410	88	2200	88	2010	89	103	20		88	3380	88	2640	88	2420	88	2210	88	2020	90	104
25		86	3340	86	2600	86	2380	86	2180	86	1980	88	101	25		87	3340	87	2600	87	2390	87	2180	87	1990	88	102
30		84	3260	84	2530	84	2310	84	2110	84	1920	85	99	30		84	3240	84	2520	84	2310	84	2110	84	1920	86	99
35		82	3170	82	2460	82	2240	82	2050	82	1860	85	97	35		82	3150	82	2450	82	2240	82	2040	82	1860	83	97
40		79	3090	79	2380	79	2180	79	1980	79	1800	85	97	40		80	3060	80	2370	80	2170	80	1970	80	1800	82	95
45		77	3010	78	2350	78	2190	79	2030	80	1870	84	96	45		77	2980	77	2300	77	2100	77	1910	77	1740	82	95
50		76	3050	78	2480	79	2300	80	2130	80	1970	84	96	50		75	2900	76	2300	77	2130	77	1980	78	1830	82	94
52		76	3110	78	2530	79	2350	80	2180	80	2010	84	95	52		74	2890	76	2350	77	2180	77	2020	78	1860	82	94

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15⁰
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S																					
					10 KTS		20 KTS		30 KTS		10 KTS							20 KTS		30 KTS																			
					V1	DIST	V1	DIST	V1	DIST	V1	DIST						V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT										
-25	91	3580	94	2910	95	2710	96	2510	96	2330	102	112	-25	90	3450	93	2810	94	2620	94	2430	95	2250	101	111														
-20	91	3640	94	2970	95	2760	95	2570	96	2380	102	112	-20	90	3520	92	2870	93	2670	94	2480	95	2290	101	111														
-15	91	3710	94	3020	94	2810	95	2620	96	2430	102	112	-15	89	3580	92	2920	93	2720	94	2530	95	2340	101	111														
-10	90	3770	93	3080	94	2870	95	2670	96	2480	102	112	-10	89	3640	92	2980	93	2770	94	2580	95	2390	101	111														
-5	90	3830	93	3130	94	2920	95	2720	96	2520	102	112	-5	89	3700	92	3030	93	2820	94	2630	95	2440	101	111														
0	90	3900	93	3190	94	2970	95	2770	96	2570	102	112	0	89	3760	92	3080	93	2870	94	2670	95	2480	101	111														
5	90	3960	93	3250	94	3030	95	2820	96	2620	102	112	5	89	3830	92	3140	93	2930	94	2730	94	2530	101	111														
10	90	4030	93	3310	94	3090	95	2880	96	2670	102	112	10	89	3890	92	3200	93	2980	94	2780	94	2580	101	111														
15	90	4200	93	3450	94	3220	95	3000	96	2790	102	112	15	89	4050	92	3330	93	3100	94	2890	95	2690	101	111														
20	91	4400	94	3610	95	3370	96	3140	97	2920	102	112	20	90	4240	93	3490	94	3250	95	3030	95	2820	101	111														
25	92	4630	95	3810	96	3560	96	3310	97	3080	102	112	25	91	4470	94	3670	94	3430	95	3190	96	2970	101	111														
30	93	4900	95	4030	96	3760	97	3510	98	3260	102	112	30	92	4730	94	3880	95	3630	96	3380	97	3140	101	111														
35	94	5200	96	4270	97	3990	98	3720	98	3460	102	112	35	93	5010	95	4120	96	3840	97	3580	97	3330	101	111														
40	95	5540	97	4550	98	4250	98	3960	99	3680	102	112	40	94	5330	96	4380	97	4090	97	3810	98	3550	101	111														
45	96	5910	98	4850	99	4530	99	4220	100	3930	102	112	45	94	5690	97	4670	97	4360	98	4070	99	3780	101	111														
47	96	6060	98	4980	99	4650	99	4330	100	4040	102	112	47	95	5830	97	4790	98	4470	98	4170	99	3880	101	111														
													50	95	6070	98	4980	98	4650	99	4340	99	4040	101	111														

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								VR	V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								VR	V2										
					10 KTS		20 KTS		30 KTS		10 KTS									20 KTS		30 KTS																	
					V1	DIST	V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST	V1	DIST												
-25	88	3290	91	2660	92	2470	92	2290	93	2120	99	110	-25	88	3250	89	2510	90	2340	91	2170	92	2000	98	109														
-20	88	3350	91	2710	92	2520	92	2340	93	2170	99	110	-20	88	3320	89	2560	90	2380	91	2210	91	2040	98	109														
-15	88	3410	90	2760	91	2570	92	2390	93	2210	99	110	-15	88	3380	89	2610	90	2430	90	2250	91	2090	98	109														
-10	88	3480	90	2810	91	2620	92	2430	93	2250	99	110	-10	88	3440	89	2660	89	2470	90	2300	91	2130	98	109														
-5	88	3540	90	2860	91	2670	92	2480	93	2300	99	110	-5	88	3510	88	2700	89	2520	90	2340	91	2170	98	109														
0	88	3610	90	2910	91	2710	92	2520	93	2340	99	110	0	88	3570	88	2750	89	2560	90	2380	91	2210	98	109														
5	88	3670	90	2960	91	2760	92	2570	93	2390	99	110	5	88	3630	88	2800	89	2610	90	2430	91	2250	98	109														
10	88	3730	90	3020	91	2810	92	2620	93	2430	99	110	10	88	3690	88	2850	89	2660	90	2470	91	2300	98	109														
15	87	3820	90	3130	91	2920	92	2720	93	2530	99	110	15	87	3670	88	2960	89	2760	90	2570	91	2380	98	108														
20	88	4000	91	3280	92	3060	93	2850	93	2650	99	110	20	86	3760	89	3090	90	2880	91	2680	91	2490	98	108														
25	89	4200	92	3450	93	3220	93	3000	94	2790	99	110	25	87	3950	90	3240	91	3030	91	2820	92	2620	98	108														
30	90	4440	93	3650	93	3410	94	3170	95	2950	99	110	30	88	4170	91	3430	91	3200	92	2980	93	2770	98	108														
35	91	4710	93	3870	94	3610	95	3360	95	3130	99	110	35	89	4420	91	3630	92	3380	93	3150	94	2930	97	108														
40	92	5000	94	4110	95	3830	95	3570	96	3320	99	110	40	90	4690	92	3850	93	3590	94	3350	94	3110	97	108														
45	93	5330	95	4380	96	4080	96	3810	97	3540	99	109	45	91	4990	93	4100	94	3820	94	3560	95	3310	97	108														
50	94	5680	96	4670	96	4360	97	4060	97	3780	99	109	50	92	5320	94	4370	94	4080	95	3800	96	3530	97	108														

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S																					
					10 KTS		20 KTS		30 KTS		10 KTS							20 KTS		30 KTS																			
					V1	DIST	V1	DIST	V1	DIST	V1	DIST						V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT										
-25	89	3230	89	2460	89	2240	89	2040	90	1890	96	107	-25	89	3200	89	2450	89	2230	89	2020	89	1830	94	106														
-20	89	3290	89	2510	89	2280	89	2080	90	1930	96	107	-20	89	3260	89	2490	89	2270	89	2060	89	1870	94	106														
-15	88	3350	88	2560	88	2330	89	2130	89	1970	96	107	-15	89	3320	89	2540	89	2320	89	2110	89	1910	94	106														
-10	88	3410	88	2610	88	2380	89	2170	89	2010	96	107	-10	89	3380	89	2590	89	2360	89	2150	89	1950	94	106														
-5	88	3470	88	2660	88	2420	88	2210	89	2040	96	107	-5	89	3440	89	2640	89	2410	89	2190	89	1990	94	106														
0	88	3540	88	2710	88	2470	88	2250	89	2080	96	107	0	89	3500	89	2690	89	2460	89	2240	89	2030	94	106														
5	88	3600	88	2760	88	2520	88	2290	89	2120	96	107	5	88	3560	88	2740	88	2500	88	2280	88	2070	94	106														
10	88	3660	88	2810	88	2560	88	2330	89	2160	96	107	10	88	3620	88	2790	88	2550	88	2320	88	2110	94	106														
15	87	3630	87	2790	88	2600	88	2420	89	2240	96	107	15	87	3590	87	2770	87	2530	87	2300	87	2110	94	106														
20	85	3580	87	2910	88	2710	89	2520	90	2340	96	107	20	85	3540	85	2730	86	2550	87	2370	88	2200	94	105														
25	85	3710	88	3050	89	2840	89	2640	90	2460	96	106	25	83	3490	86	2860	87	2670	87	2480	88	2300	94	105														
30	86	3920	89	3210	89	3000	90	2790	91	2590	96	106	30	84	3670	86	3010	87	2810	88	2610	89	2420	94	105														
35	87	4140	89	3400	90	3170	91	2950	92	2740	96	106	35	85	3880	87	3180	88	2970	89	2760	89	2560	94	105														
40	88	4390	90	3610	91	3360	92	3130	92	2910	96	106	40	86	4110	88	3370	89	3140	90	2930	90	2720	94	105														
45	89	4670	91	3830	92	3580	92	3330	93	3100	96	106	45	87	4370	89	3580	90	3340	90	3110	91	2890	94	104														
50	90	4980	92	4080	92	3810	93	3550	94	3300	96	106	50	88	4650	90	3810	90	3560	91	3310	92	3070	94	104														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-25	89 3180	89 2430	89 2220	89 2010	89 1820	92 105	-25	89 3160	89 2430	89 2210	89 2010	89 1820	91 104
-20	89 3230	89 2480	89 2260	89 2060	89 1860	92 105	-20	89 3220	89 2470	89 2260	89 2050	89 1860	91 104
-15	89 3290	89 2530	89 2310	89 2100	89 1900	92 105	-15	89 3270	89 2520	89 2300	89 2090	89 1900	91 104
-10	89 3350	89 2580	89 2350	89 2140	89 1940	92 105	-10	89 3330	89 2570	89 2340	89 2140	89 1940	91 104
-5	89 3410	89 2630	89 2400	89 2180	89 1980	92 105	-5	89 3390	89 2620	89 2390	89 2180	89 1980	91 104
0	89 3480	89 2680	89 2450	89 2230	89 2030	92 105	0	89 3450	89 2670	89 2440	89 2220	89 2020	91 104
5	89 3530	89 2730	89 2490	89 2270	89 2060	92 105	5	89 3510	89 2710	89 2480	89 2260	89 2060	91 104
10	89 3590	89 2770	89 2530	89 2310	89 2100	92 105	10	89 3570	89 2760	89 2520	89 2300	89 2100	91 104
15	87 3560	87 2750	87 2510	87 2290	87 2080	92 105	15	87 3530	87 2730	87 2500	87 2280	87 2070	91 103
20	85 3510	85 2700	85 2470	85 2250	86 2060	92 104	20	86 3480	86 2690	86 2460	86 2240	86 2040	90 103
25	83 3450	84 2690	85 2500	85 2330	86 2160	92 104	25	84 3410	84 2630	84 2410	84 2190	84 2020	90 102
30	82 3440	84 2820	85 2630	86 2440	87 2270	92 103	30	81 3340	82 2640	83 2460	84 2290	85 2120	90 102
35	83 3630	85 2970	86 2770	87 2580	87 2390	92 103	35	81 3390	83 2780	84 2590	84 2400	85 2230	90 101
40	84 3840	86 3150	87 2930	87 2730	88 2530	92 103	40	82 3590	84 2940	85 2740	85 2540	86 2360	90 101
45	85 4080	87 3340	88 3120	88 2900	89 2690	92 103	45	83 3800	85 3110	85 2900	86 2700	87 2510	90 101
50	86 4340	88 3550	88 3310	89 3080	90 2860	92 103	50	84 4040	86 3310	86 3080	87 2870	87 2660	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-25	90 3140	90 2420	90 2210	90 2010	90 1820	91 104	-25	90 3140	90 2420	90 2210	90 2020	90 1830	91 105
-20	90 3200	90 2470	90 2250	90 2050	90 1860	91 104	-20	90 3190	90 2470	90 2260	90 2060	90 1870	91 105
-15	90 3260	90 2510	90 2300	90 2090	90 1900	91 104	-15	90 3250	90 2510	90 2300	90 2100	90 1910	91 105
-10	89 3320	89 2560	89 2340	89 2130	89 1940	91 104	-10	90 3300	90 2560	90 2340	90 2140	90 1940	91 105
-5	89 3380	89 2610	89 2390	89 2180	89 1980	91 104	-5	90 3360	90 2610	90 2390	90 2180	90 1990	91 105
0	89 3440	89 2660	89 2430	89 2220	89 2020	91 104	0	90 3420	90 2660	90 2430	90 2220	90 2030	91 105
5	89 3490	89 2710	89 2480	89 2260	89 2060	91 104	5	90 3480	90 2700	90 2480	90 2260	90 2060	91 105
10	89 3550	89 2750	89 2520	89 2300	89 2100	91 104	10	90 3530	90 2750	90 2520	90 2300	90 2100	91 105
15	88 3510	88 2720	88 2490	88 2280	88 2070	89 102	15	88 3490	88 2720	88 2490	88 2270	88 2070	90 103
20	86 3450	86 2670	86 2450	86 2230	86 2030	89 101	20	86 3430	86 2660	86 2440	86 2230	86 2030	87 101
25	84 3380	84 2620	84 2390	84 2180	84 1980	89 101	25	84 3360	84 2600	84 2380	84 2170	84 1980	87 100
30	82 3310	82 2550	82 2330	82 2140	83 1980	88 100	30	82 3280	82 2540	82 2320	82 2110	82 1920	87 99
35	79 3230	81 2600	82 2420	82 2250	83 2080	88 100	35	80 3200	80 2470	80 2260	80 2090	81 1940	87 98
40	79 3340	82 2730	82 2540	83 2360	84 2190	88 99	40	77 3130	79 2550	80 2370	81 2200	81 2040	86 98
45	80 3550	82 2900	83 2700	84 2510	84 2320	88 99	45	78 3300	80 2690	81 2500	81 2330	82 2150	86 97
50	81 3760	83 3070	84 2860	85 2660	85 2470	88 99	50	79 3500	81 2850	82 2660	82 2470	83 2280	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-25	90 3130	90 2430	90 2220	90 2020	90 1840	92 106	-25	91 3140	91 2440	91 2230	91 2040	91 1860	93 107
-20	90 3190	90 2470	90 2260	90 2060	90 1880	92 106	-20	91 3200	91 2490	91 2280	91 2080	91 1890	93 107
-15	90 3240	90 2520	90 2310	90 2100	90 1920	92 106	-15	91 3250	91 2530	91 2320	91 2120	91 1930	93 107
-10	90 3300	90 2570	90 2350	90 2150	90 1950	92 106	-10	91 3310	91 2580	91 2360	91 2160	91 1970	93 107
-5	90 3360	90 2610	90 2390	90 2190	90 1990	92 106	-5	91 3360	91 2630	91 2410	91 2200	91 2010	93 107
0	90 3420	90 2660	90 2440	90 2230	90 2030	92 106	0	90 3420	90 2670	90 2450	90 2250	90 2050	93 107
5	90 3470	90 2710	90 2480	90 2270	90 2070	92 106	5	90 3470	90 2720	90 2490	90 2280	90 2090	93 107
10	90 3530	90 2750	90 2520	90 2310	90 2110	92 106	10	90 3530	90 2760	90 2540	90 2320	90 2120	93 107
15	88 3480	88 2720	88 2490	88 2280	88 2080	90 104	15	89 3480	89 2720	89 2500	89 2290	89 2090	91 105
20	86 3410	86 2660	86 2440	86 2230	86 2030	88 102	20	87 3410	87 2660	87 2440	87 2230	87 2040	89 103
25	84 3340	84 2590	84 2380	84 2170	84 1980	86 99	25	85 3320	85 2590	85 2370	85 2170	85 1980	86 100
30	82 3250	82 2520	82 2310	82 2110	82 1920	85 98	30	82 3240	82 2520	82 2300	82 2100	82 1910	84 97
35	80 3170	80 2460	80 2240	80 2040	80 1860	85 97	35	80 3150	80 2440	80 2230	80 2040	80 1850	83 96
40	77 3090	77 2390	78 2210	79 2050	79 1890	84 96	40	78 3070	78 2370	78 2170	78 1970	78 1800	82 95
45	76 3070	78 2500	79 2330	79 2160	80 2000	84 96	45	75 2980	76 2320	76 2150	77 2000	77 1850	82 94
50	77 3240	79 2640	79 2460	80 2280	80 2110	84 95	50	74 3000	76 2440	77 2270	77 2100	78 1940	82 94

Figure 4-20 (Sheet 6 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS		
			10 KTS	20 KTS	30 KTS	10 KTS	20 KTS					30 KTS							
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST							
			FT	FT	FT	FT	FT					FT							
-30	90 3610	93 2940	94 2740	95 2540	96 2350	102 112	-30	89 3490	92 2840	93 2640	94 2450	95 2270	101 111						
-25	90 3680	93 3000	94 2790	95 2600	96 2410	102 112	-25	89 3550	92 2900	93 2700	94 2510	95 2320	101 111						
-20	90 3740	93 3060	94 2850	95 2650	96 2460	102 112	-20	89 3620	92 2950	93 2750	94 2560	95 2370	101 111						
-15	90 3810	93 3120	94 2900	95 2700	96 2510	102 112	-15	89 3680	92 3010	93 2810	94 2610	95 2420	101 111						
-10	90 3880	93 3170	94 2960	95 2750	96 2560	102 112	-10	89 3750	92 3070	93 2860	94 2660	94 2470	101 111						
-5	90 3940	93 3230	94 3020	95 2810	96 2610	102 112	-5	89 3810	92 3120	93 2910	94 2710	94 2520	101 111						
0	90 4030	93 3300	94 3080	95 2870	96 2670	102 112	0	89 3890	92 3190	93 2980	93 2770	94 2580	101 111						
5	90 4130	93 3390	94 3170	95 2950	96 2740	102 112	5	89 3990	92 3270	93 3050	94 2850	94 2650	101 111						
10	90 4250	93 3500	94 3260	95 3040	96 2830	102 112	10	89 4110	92 3370	93 3150	94 2940	95 2730	101 111						
15	91 4470	94 3670	95 3430	96 3200	96 2980	102 112	15	90 4310	93 3540	94 3310	94 3090	95 2870	101 111						
20	92 4700	94 3870	95 3610	96 3370	97 3140	102 112	20	91 4530	93 3730	94 3480	95 3250	96 3020	101 111						
25	92 4970	95 4090	96 3820	97 3560	98 3320	102 112	25	91 4790	94 3940	95 3680	96 3430	96 3190	101 111						
30	93 5260	96 4330	97 4050	97 3770	98 3510	102 112	30	92 5070	95 4170	96 3900	96 3630	97 3380	101 111						
35	94 5590	97 4600	97 4290	98 4010	99 3730	102 112	35	93 5380	96 4430	96 4130	97 3860	98 3590	101 111						
40	95 5950	97 4890	98 4570	99 4270	99 3980	102 112	40	94 5730	96 4710	97 4400	98 4100	98 3820	101 111						
41	95 6030	98 4960	98 4630	99 4320	100 4030	102 112	43	95 5960	97 4890	98 4570	98 4270	99 3970	101 111						
43	96 6190	98 5090	99 4750	99 4430	100 4130	102 112	45	95 6110	97 5020	98 4690	98 4380	99 4080	101 111						
							46	95 6190	97 5090	98 4750	99 4440	99 4130	101 111						

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS																				
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																				
-30	88	3360	91	2690	91	2500	92	2320	93	2150	99	110	-30	89	3330	89	2540	90	2360	90	2190	91	2030	98	109														
-25	88	3420	90	2740	91	2550	92	2370	93	2190	99	110	-25	89	3390	89	2590	90	2410	90	2240	91	2070	98	109														
-20	88	3490	90	2790	91	2600	92	2420	93	2240	99	110	-20	88	3450	88	2640	89	2460	90	2280	91	2110	98	109														
-15	88	3560	90	2850	91	2650	92	2460	93	2290	99	110	-15	88	3520	88	2690	89	2510	90	2330	91	2160	98	109														
-10	88	3620	90	2900	91	2700	92	2510	93	2330	99	110	-10	88	3580	88	2740	89	2550	90	2370	91	2200	98	109														
-5	88	3690	90	2950	91	2750	92	2560	93	2380	99	110	-5	88	3650	88	2800	89	2600	90	2420	91	2240	98	109														
0	88	3750	90	3010	91	2810	92	2620	93	2430	99	110	0	88	3700	88	2850	89	2650	90	2470	91	2290	98	109														
5	87	3780	90	3090	91	2880	92	2680	93	2490	99	110	5	88	3740	88	2920	89	2720	90	2530	91	2350	98	109														
10	87	3870	90	3180	91	2970	92	2760	93	2570	99	110	10	87	3760	88	3000	89	2800	90	2610	91	2420	98	108														
15	88	4060	91	3330	92	3110	93	2900	93	2700	99	110	15	86	3820	89	3140	90	2930	90	2730	91	2530	98	108														
20	89	4260	92	3510	92	3270	93	3050	94	2840	99	110	20	87	4010	90	3290	90	3070	91	2860	92	2660	98	108														
25	90	4500	92	3700	93	3460	94	3220	95	3000	99	110	25	88	4230	90	3470	91	3240	92	3020	93	2810	98	108														
30	90	4760	93	3920	94	3660	95	3410	95	3170	99	110	30	89	4470	91	3670	92	3430	93	3200	93	2970	97	108														
35	91	5050	94	4150	94	3880	95	3620	96	3370	99	110	35	89	4730	92	3890	93	3630	93	3390	94	3150	97	108														
40	92	5370	95	4410	95	4120	96	3840	96	3580	99	110	40	90	5030	93	4130	93	3860	94	3600	95	3350	97	108														
45	93	5720	95	4700	96	4390	96	4100	97	3820	99	109	45	91	5350	93	4400	94	4110	95	3830	95	3570	97	108														
46	93	5800	95	4770	96	4450	97	4150	97	3870	99	109	48	92	5570	94	4570	94	4270	95	3990	96	3710	97	108														
48	94	5950	96	4890	96	4570	97	4260	97	3970	99	109																											

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2								
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT									
-30	89	3300	89	2520	89	2290	89	1910	96	108	-30	89	3270	89	2500	89	2280	89	2070	89	1870	94	106		
-25	89	3360	89	2570	89	2340	89	1950	96	108	-25	89	3330	89	2550	89	2320	89	2110	89	1910	94	106		
-20	89	3420	89	2620	89	2390	89	1990	96	108	-20	89	3390	89	2600	89	2370	89	2160	89	1960	94	106		
-15	89	3490	89	2670	89	2430	89	2030	96	108	-15	89	3460	89	2650	89	2420	89	2200	89	2000	94	106		
-10	89	3550	89	2720	89	2480	89	2070	96	108	-10	89	3520	89	2700	89	2470	89	2250	89	2040	94	106		
-5	89	3610	89	2770	89	2530	89	2110	96	108	-5	89	3580	89	2760	89	2520	89	2290	89	2080	94	106		
0	88	3670	88	2820	88	2570	88	2160	96	107	0	89	3630	89	2800	89	2550	89	2330	89	2120	94	106		
5	88	3700	88	2840	88	2600	88	2190	96	107	5	88	3670	88	2820	88	2580	88	2350	88	2140	94	106		
10	87	3720	87	2860	87	2640	88	2280	96	107	10	87	3680	87	2830	87	2590	87	2360	87	2150	94	106		
15	85	3660	87	2950	88	2760	89	2380	96	107	15	85	3620	85	2790	86	2590	87	2410	87	2240	94	105		
20	85	3760	87	3090	88	2880	89	2690	90	2500	96	106	20	83	3570	86	2910	86	2710	87	2520	88	2340	94	105
25	86	3960	88	3260	89	3040	90	2830	91	2630	96	106	25	84	3720	86	3050	87	2850	88	2650	88	2460	94	105
30	87	4190	89	3440	90	3210	91	2990	91	2780	96	106	30	85	3920	87	3220	88	3000	89	2800	89	2600	94	105
35	88	4430	90	3640	91	3400	91	3170	92	2950	96	106	35	86	4150	88	3410	89	3180	89	2960	90	2750	94	105
40	88	4700	91	3870	91	3610	92	3360	93	3130	96	106	40	86	4400	89	3610	89	3370	90	3140	91	2920	94	105
45	89	5010	91	4110	92	3840	93	3580	93	3330	96	106	45	87	4670	90	3840	90	3580	91	3340	91	3100	94	104
48	90	5200	92	4270	93	3990	93	3720	94	3460	96	106	48	88	4850	90	3990	91	3720	91	3470	92	3220	94	104

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											VENR = 160 KIAS											WEIGHT = 13000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2		TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																			
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT												
-30	89	3250	89	2490	89	2270	89	2060	89	1870	92 105		-30	90	3230	90	2480	90	2260	90	2060	90	1870	91 104																			
-25	89	3300	89	2540	89	2310	89	2110	89	1910	92 105		-25	90	3280	90	2530	90	2310	90	2100	90	1910	91 104																			
-20	89	3370	89	2590	89	2360	89	2150	89	1950	92 105		-20	89	3350	89	2580	89	2360	89	2150	89	1950	91 104																			
-15	89	3430	89	2640	89	2410	89	2190	89	1990	92 105		-15	89	3410	89	2630	89	2400	89	2190	89	1990	91 104																			
-10	89	3490	89	2690	89	2460	89	2240	89	2030	92 105		-10	89	3470	89	2680	89	2450	89	2230	89	2030	91 104																			
-5	89	3550	89	2740	89	2500	89	2280	89	2080	92 105		-5	89	3530	89	2730	89	2500	89	2280	89	2070	91 104																			
0	89	3600	89	2780	89	2540	89	2320	89	2110	92 105		0	89	3580	89	2770	89	2530	89	2310	89	2100	91 104																			
5	88	3630	88	2810	88	2560	88	2340	88	2130	92 105		5	88	3610	88	2790	88	2550	88	2330	88	2120	91 103																			
10	87	3650	87	2820	87	2570	87	2350	87	2140	92 105		10	88	3620	88	2800	88	2560	88	2340	88	2130	91 103																			
15	85	3590	85	2770	85	2530	85	2300	85	2100	92 104		15	86	3550	86	2750	86	2510	86	2290	86	2090	91 103																			
20	84	3530	84	2730	84	2540	85	2370	86	2200	92 104		20	84	3490	84	2700	84	2470	84	2250	84	2060	90 102																			
25	82	3490	84	2860	85	2670	86	2480	86	2300	92 103		25	82	3420	82	2680	83	2500	84	2320	84	2160	90 102																			
30	82	3670	85	3010	86	2810	86	2610	87	2430	92 103		30	80	3430	83	2810	84	2620	84	2440	85	2260	90 101																			
35	83	3880	86	3180	86	2970	87	2760	88	2560	92 103		35	81	3620	84	2970	84	2770	85	2570	86	2390	90 101																			
40	84	4110	87	3370	87	3140	88	2930	89	2720	92 103		40	82	3830	84	3140	85	2930	86	2720	86	2530	90 101																			
45	85	4360	87	3580	88	3340	89	3110	89	2890	92 103		45	83	4060	85	3330	86	3110	86	2890	87	2680	90 101																			
48	86	4530	88	3710	88	3470	89	3230	90	3000	92 103		48	84	4210	86	3460	86	3220	87	3000	87	2790	90 101																			

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																				
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																						
			V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT					V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT																					
-30	90 3210	90 2480	90 2260	90 2060	90 1870	91 105		-30	90 3200	90 2480	90 2270	90 2060	90 1880	92 106																									
-25	90 3270	90 2520	90 2310	90 2100	90 1910	91 105		-25	90 3260	90 2520	90 2310	90 2110	90 1910	92 106																									
-20	90 3330	90 2570	90 2350	90 2140	90 1950	91 105		-20	90 3320	90 2570	90 2350	90 2150	90 1950	92 106																									
-15	90 3390	90 2620	90 2400	90 2190	90 1990	91 105		-15	90 3380	90 2620	90 2400	90 2190	90 2000	92 106																									
-10	90 3450	90 2670	90 2450	90 2230	90 2030	91 105		-10	90 3440	90 2670	90 2450	90 2230	90 2040	92 106																									
-5	90 3510	90 2720	90 2490	90 2280	90 2070	91 105		-5	90 3500	90 2720	90 2490	90 2280	90 2080	92 105																									
0	89 3560	89 2760	89 2530	89 2310	89 2100	91 104		0	90 3540	90 2760	90 2530	90 2310	90 2110	92 105																									
5	89 3580	89 2780	89 2550	89 2330	89 2120	90 104		5	89 3570	89 2780	89 2550	89 2330	89 2120	91 105																									
10	88 3590	88 2790	88 2550	88 2330	88 2130	89 103		10	88 3570	88 2780	88 2550	88 2330	88 2130	90 103																									
15	86 3530	86 2730	86 2500	86 2280	86 2080	89 101		15	86 3500	86 2720	86 2490	86 2280	86 2080	88 101																									
20	84 3460	84 2680	84 2450	84 2240	84 2030	89 101		20	84 3430	84 2670	84 2440	84 2230	84 2030	87 100																									
25	82 3390	82 2620	82 2390	82 2180	82 2010	89 100		25	82 3360	82 2600	82 2380	82 2170	82 1970	87 99																									
30	80 3320	81 2630	81 2450	82 2280	83 2110	88 100		30	80 3280	80 2540	80 2320	80 2120	81 1970	87 99																									
35	79 3380	81 2760	82 2570	83 2400	83 2220	88 99		35	78 3210	79 2580	80 2400	81 2230	81 2070	86 98																									
40	80 3570	82 2920	83 2720	83 2530	84 2350	88 99		40	78 3320	80 2710	81 2530	81 2350	82 2170	86 97																									
45	81 3780	83 3100	84 2890	84 2680	85 2490	88 99		45	79 3510	81 2870	81 2680	82 2490	83 2300	86 97																									
48	82 3920	84 3210	84 2990	85 2780	85 2590	88 99		48	79 3640	81 2980	82 2780	82 2580	83 2390	86 97																									

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT									V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT		
-30	91	3200	91	2480	91	2270	91	2070	91	1890	93	107	-30	91	3210	91	2500	91	2290	91	2090	91	1900	93	108		
-25	91	3260	91	2530	91	2320	91	2110	91	1920	93	107	-25	91	3260	91	2540	91	2330	91	2130	91	1940	93	108		
-20	90	3320	90	2580	90	2360	90	2160	90	1960	93	107	-20	91	3320	91	2590	91	2380	91	2170	91	1980	93	108		
-15	90	3380	90	2630	90	2410	90	2200	90	2010	93	107	-15	91	3380	91	2640	91	2420	91	2210	91	2020	93	108		
-10	90	3430	90	2680	90	2450	90	2240	90	2050	93	107	-10	91	3440	91	2690	91	2470	91	2260	91	2060	93	108		
-5	90	3490	90	2720	90	2500	90	2290	90	2090	93	107	-5	91	3500	91	2730	91	2510	91	2300	91	2100	93	108		
0	90	3540	90	2760	90	2530	90	2320	90	2120	92	106	0	90	3540	90	2770	90	2540	90	2330	90	2130	93	107		
5	89	3560	89	2780	89	2550	89	2330	89	2130	92	106	5	90	3560	90	2790	90	2560	90	2350	90	2140	92	107		
10	89	3560	89	2780	89	2550	89	2340	89	2130	91	104	10	89	3560	89	2790	89	2560	89	2350	89	2140	91	105		
15	87	3490	87	2720	87	2490	87	2280	87	2080	88	102	15	87	3480	87	2720	87	2500	87	2290	87	2090	89	103		
20	85	3410	85	2660	85	2430	85	2220	85	2030	86	99	20	85	3400	85	2650	85	2430	85	2230	85	2030	87	100		
25	82	3330	82	2590	82	2370	82	2160	82	1970	85	98	25	83	3310	83	2580	83	2360	83	2160	83	1970	84	97		
30	80	3250	80	2520	80	2310	80	2100	80	1910	85	97	30	80	3230	80	2510	80	2300	80	2100	80	1910	83	96		
35	78	3180	78	2460	78	2250	78	2070	79	1920	85	97	35	78	3150	78	2440	78	2230	78	2030	78	1850	82	95		
40	76	3100	76	2520	76	2350	79	2180	80	2020	84	96	40	76	3070	76	2370	76	2180	77	2020	77	1870	82	95		
45	76	3260	78	2660	79	2480	80	2300	80	2130	84	95	45	74	3020	76	2460	77	2290	77	2120	78	1970	82	94		
48	77	3370	79	2760	79	2560	80	2380	81	2200	84	95	48	74	3120	76	2540	77	2360	78	2190	78	2030	82	94		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								VR	V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								VR	V2 KIAS		
					10 KTS		20 KTS		30 KTS		10 KTS									20 KTS		30 KTS									
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-30	90	3710	93	3030	94	2820	95	2620	96	2430	102	112	-30	89	3580	92	2930	93	2730	94	2530	95	2350	101	111						
-25	90	3780	93	3090	94	2880	95	2680	96	2490	102	112	-25	89	3650	92	2990	93	2780	94	2590	94	2400	101	111						
-20	90	3850	93	3150	94	2940	95	2740	95	2540	102	112	-20	89	3720	92	3050	93	2840	94	2640	94	2450	101	111						
-15	90	3920	93	3210	94	3000	95	2790	95	2590	102	112	-15	89	3780	92	3100	93	2900	93	2700	94	2500	101	111						
-10	90	3990	93	3270	94	3050	94	2850	95	2640	102	112	-10	88	3850	91	3160	92	2950	93	2750	94	2560	101	111						
-5	89	4060	93	3340	93	3110	94	2900	95	2700	102	112	-5	88	3920	91	3220	92	3010	93	2800	94	2610	101	111						
0	90	4190	93	3440	94	3210	95	3000	95	2790	102	112	0	89	4040	92	3320	93	3100	93	2890	94	2690	101	111						
5	90	4330	93	3560	94	3330	95	3100	96	2890	102	112	5	89	4180	92	3440	93	3210	94	2990	94	2790	101	111						
10	91	4520	94	3730	94	3480	95	3250	96	3020	102	112	10	90	4360	92	3590	93	3360	94	3130	95	2910	101	111						
15	91	4770	94	3930	95	3670	96	3430	97	3190	102	112	15	90	4600	93	3790	94	3540	95	3300	96	3080	101	111						
20	92	5040	95	4150	96	3880	97	3620	97	3370	102	112	20	91	4860	94	4000	95	3740	95	3490	96	3250	101	111						
25	93	5330	96	4390	96	4110	97	3830	98	3570	102	112	25	92	5140	95	4230	95	3960	96	3690	97	3440	101	111						
30	94	5660	96	4660	97	4360	98	4070	99	3790	102	112	30	93	5450	95	4490	96	4190	97	3910	97	3650	101	111						
35	95	6010	97	4950	98	4630	98	4320	99	4020	102	112	35	94	5780	96	4760	97	4450	97	4150	98	3870	101	111						
37	95	6170	97	5070	98	4750	99	4430	99	4130	102	112	39	94	6080	97	5000	97	4680	98	4370	98	4070	101	111						
39	95	6320	98	5200	98	4860	99	4540	100	4230	102	112	40	94	6160	97	5070	97	4740	98	4420	99	4120	101	111						
													42	95	6320	97	5200	98	4860	98	4540	99	4230	101	111						

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT
-30	89	3500	90	2770	91	2580	92	2400	93	2220	99	110	-30	89	3460	89	2640	89	2440	90	2260	91	2100	98	109
-25	89	3570	90	2830	91	2630	92	2450	93	2270	99	110	-25	89	3530	89	2700	89	2490	90	2310	91	2140	98	109
-20	88	3640	90	2880	91	2690	92	2500	93	2320	99	110	-20	89	3600	89	2750	89	2540	90	2360	91	2190	98	109
-15	88	3710	90	2940	91	2740	92	2550	92	2360	99	110	-15	89	3670	89	2810	89	2590	90	2410	91	2230	98	109
-10	88	3780	90	2990	91	2790	92	2600	92	2410	99	110	-10	89	3740	89	2860	89	2630	90	2450	91	2280	98	109
-5	88	3850	90	3050	91	2840	91	2650	92	2460	99	110	-5	88	3800	88	2920	89	2680	90	2500	90	2320	98	109
0	87	3870	90	3140	91	2930	92	2730	92	2540	99	110	0	88	3820	88	2960	89	2760	90	2580	91	2390	98	109
5	87	3940	90	3240	91	3020	92	2820	92	2620	99	110	5	87	3830	88	3060	89	2850	90	2660	91	2470	98	108
10	88	4110	91	3380	91	3160	92	2940	93	2740	99	110	10	86	3870	89	3180	89	2970	90	2770	91	2570	98	108
15	89	4330	91	3560	92	3330	93	3100	94	2890	99	110	15	87	4070	89	3350	90	3120	91	2910	92	2710	98	108
20	89	4560	92	3760	93	3510	94	3280	94	3050	99	110	20	87	4290	90	3530	91	3300	92	3070	92	2860	98	108
25	90	4820	93	3970	94	3710	94	3460	95	3230	99	110	25	88	4530	91	3730	92	3480	92	3250	93	3020	98	108
30	91	5110	94	4210	94	3930	95	3670	96	3420	99	110	30	89	4790	92	3940	92	3680	93	3440	94	3200	97	108
35	92	5420	94	4460	95	4170	96	3890	96	3630	99	110	35	90	5080	92	4180	93	3910	94	3640	94	3390	97	108
40	93	5770	95	4750	96	4440	96	4140	97	3860	99	109	40	91	5390	93	4440	94	4150	94	3870	95	3600	97	108
42	93	5920	95	4870	96	4550	96	4250	97	3960	99	109	45	92	5750	94	4730	94	4420	95	4130	95	3850	97	108
45	94	6150	96	5060	96	4730	97	4420	97	4110	99	109	46	92	5820	94	4800	95	4480	95	4180	96	3900	97	108
46	94	6230	96	5130	96	4790	97	4480	98	4170	99	109													

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT							V1 DIST KIAS	FT	V1 DIST KIAS	FT	V1 DIST KIAS	FT																	
-30	89	3430	89	2630	89	2390	89	2180	89	1980	96	108	-30	89	3400	89	2610	89	2380	89	2170	89	1960	94	106														
-25	89	3500	89	2680	89	2440	89	2220	89	2020	96	108	-25	89	3470	89	2660	89	2430	89	2210	89	2010	94	106														
-20	89	3560	89	2730	89	2490	89	2270	89	2060	96	108	-20	89	3530	89	2720	89	2480	89	2260	89	2050	94	106														
-15	89	3630	89	2790	89	2550	89	2320	89	2100	96	108	-15	89	3600	89	2770	89	2530	89	2310	89	2100	94	106														
-10	89	3700	89	2840	89	2590	89	2360	89	2150	96	108	-10	89	3670	89	2820	89	2580	89	2350	89	2140	94	106														
-5	89	3760	89	2890	89	2640	89	2410	89	2190	96	108	-5	89	3730	89	2870	89	2630	89	2400	89	2180	94	106														
0	88	3780	88	2910	88	2660	88	2430	89	2250	96	107	0	88	3740	88	2890	88	2640	88	2410	88	2190	94	106														
5	87	3790	87	2910	87	2690	88	2500	89	2330	96	107	5	87	3750	87	2890	87	2640	87	2410	87	2190	94	106														
10	85	3750	87	3000	88	2800	88	2610	89	2420	96	107	10	85	3710	85	2860	86	2630	87	2450	87	2280	94	105														
15	85	3820	87	3140	88	2930	89	2730	90	2540	96	106	15	83	3650	85	2950	86	2760	87	2570	88	2380	94	105														
20	86	4020	88	3310	89	3090	90	2880	90	2680	96	106	20	83	3770	86	3100	87	2890	88	2690	88	2500	94	105														
25	86	4240	89	3490	90	3260	90	3040	91	2830	96	106	25	84	3970	87	3270	88	3050	88	2840	89	2640	94	105														
30	87	4490	90	3690	90	3450	91	3210	92	2990	96	106	30	85	4200	88	3450	88	3220	89	3000	90	2790	94	105														
35	88	4750	90	3910	91	3650	92	3410	92	3170	96	106	35	86	4440	88	3650	89	3410	90	3180	90	2960	94	105														
40	89	5040	91	4150	92	3880	92	3620	93	3370	96	106	40	87	4710	89	3870	90	3620	90	3370	91	3140	94	104														
45	90	5370	92	4420	92	4130	93	3850	94	3580	96	106	45	88	5010	90	4120	90	3850	91	3590	92	3340	94	104														
46	90	5440	92	4480	93	4190	93	3900	94	3630	96	106	46	88	5070	90	4170	91	3900	91	3630	92	3380	94	104														

Figure 4-20 (Sheet 9 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST	KIAS FT	V1 DIST	KIAS FT	V1 DIST	KIAS FT	V1 DIST	KIAS FT							V1 DIST	KIAS FT	V1 DIST	KIAS FT	V1 DIST	KIAS FT	V1 DIST	KIAS FT
-30	90	3380	90	2600	90	2370	90	2160	90	1960	92	105	-30	90	3360	90	2590	90	2360	90	2150	90	1960	91	104		
-25	89	3440	89	2650	89	2420	89	2200	89	2000	92	105	-25	90	3420	90	2640	90	2410	90	2200	90	2000	91	104		
-20	89	3510	89	2700	89	2470	89	2250	89	2040	92	105	-20	90	3480	90	2690	90	2460	90	2240	90	2040	91	104		
-15	89	3570	89	2760	89	2520	89	2300	89	2090	92	105	-15	90	3550	90	2750	90	2510	90	2290	90	2090	91	104		
-10	89	3640	89	2810	89	2570	89	2340	89	2130	92	105	-10	90	3610	90	2800	90	2560	90	2340	90	2130	91	104		
-5	89	3700	89	2860	89	2610	89	2390	89	2170	92	105	-5	89	3670	89	2850	89	2600	89	2380	89	2170	91	104		
0	88	3710	88	2870	88	2620	88	2400	88	2180	92	105	0	89	3680	89	2850	89	2610	89	2390	89	2180	91	104		
5	87	3710	87	2870	87	2620	87	2400	87	2180	92	105	5	88	3680	88	2850	88	2610	88	2390	88	2170	91	103		
10	86	3670	86	2840	86	2590	86	2370	86	2150	92	104	10	86	3640	86	2820	86	2580	86	2350	86	2140	91	103		
15	84	3600	84	2780	84	2590	85	2410	86	2240	92	104	15	84	3570	84	2760	84	2520	84	2300	84	2100	90	102		
20	82	3540	84	2910	85	2710	86	2520	86	2340	92	103	20	82	3500	82	2720	83	2540	84	2360	84	2190	90	102		
25	82	3720	85	3050	85	2850	86	2650	87	2460	92	103	25	80	3480	83	2860	83	2660	84	2480	85	2300	90	101		
30	83	3920	86	3220	86	3010	87	2800	88	2600	92	103	30	81	3660	83	3010	84	2800	85	2610	85	2420	90	101		
35	84	4140	86	3410	87	3180	88	2960	88	2750	92	103	35	82	3860	84	3170	85	2960	85	2760	86	2560	90	101		
40	85	4390	87	3610	88	3370	88	3140	89	2920	92	103	40	83	4090	85	3360	86	3140	86	2920	87	2710	90	101		
45	86	4670	88	3840	88	3580	89	3340	90	3110	92	103	45	84	4350	86	3570	86	3330	87	3100	87	2880	90	101		
46	86	4730	88	3890	89	3630	89	3380	90	3140	92	103	46	84	4400	86	3610	86	3370	87	3140	88	2920	90	101		

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					VR V2 KIAS								
			10 KTS		20 KTS		30 KTS					10 KTS		20 KTS		30 KTS									
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST										
			KIAS	FT	KIAS	FT	KIAS					FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		
-30	90	3340	90	2580	90	2360	90	2150	90	1960	92	105	-30	91	3330	91	2580	91	2360	91	2160	91	1960	92	106
-25	90	3400	90	2630	90	2410	90	2200	90	2000	92	105	-25	90	3390	90	2630	90	2410	90	2200	90	2000	92	106
-20	90	3470	90	2690	90	2460	90	2240	90	2040	92	105	-20	90	3460	90	2680	90	2460	90	2250	90	2050	92	106
-15	90	3530	90	2740	90	2510	90	2290	90	2090	92	105	-15	90	3520	90	2740	90	2510	90	2290	90	2090	92	106
-10	90	3590	90	2790	90	2550	90	2330	90	2130	92	105	-10	90	3580	90	2790	90	2550	90	2340	90	2130	92	106
-5	90	3650	90	2840	90	2600	90	2380	90	2170	92	105	-5	90	3640	90	2830	90	2600	90	2380	90	2170	92	106
0	89	3660	89	2840	89	2610	89	2380	89	2170	91	104	0	89	3640	89	2840	89	2600	89	2380	89	2180	91	105
5	88	3660	88	2840	88	2600	88	2380	88	2170	89	103	5	88	3640	88	2830	88	2600	88	2380	88	2170	90	104
10	86	3610	86	2800	86	2570	86	2350	86	2140	89	102	10	86	3590	86	2790	86	2560	86	2340	86	2140	88	101
15	84	3540	84	2740	84	2510	84	2290	84	2090	89	101	15	84	3510	84	2730	84	2500	84	2280	84	2080	87	100
20	82	3460	82	2680	82	2450	82	2240	82	2050	89	100	20	82	3430	82	2670	82	2440	82	2230	82	2030	87	99
25	80	3400	81	2670	81	2490	82	2310	83	2150	88	100	25	80	3360	80	2600	80	2380	80	2170	81	2000	87	99
30	79	3420	81	2800	82	2610	82	2430	83	2250	88	99	30	78	3290	79	2610	80	2440	80	2260	81	2100	86	98
35	80	3600	82	2950	83	2750	83	2560	84	2380	88	99	35	77	3350	80	2750	80	2560	81	2380	82	2200	86	98
40	81	3810	83	3120	83	2910	84	2710	84	2520	88	99	40	78	3540	80	2900	81	2700	82	2510	82	2330	86	97
45	82	4040	83	3310	84	3090	85	2880	85	2670	88	99	45	79	3750	81	3070	82	2860	82	2670	83	2470	86	97
46	82	4090	84	3360	84	3130	85	2910	85	2700	88	99	46	79	3790	81	3110	82	2900	83	2690	83	2500	86	97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS																																																																																																																																																																																																																																																																																																																																																																																																														
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																																																																																																																																																																																																																																																																																																																																																																																														
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS																																																																																																																																																																																																																																																																																																																																																																																																
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	90 3720	93 3050	94 2840	95 2640	95 2450	102 112	-35	89 3630	92 2950	93 2750	93 2550	94 2370	101 111		
-30	90 3800	93 3110	94 2900	94 2700	95 2510	102 112	-30	89 3700	92 3010	92 2810	93 2610	94 2420	101 111		
-25	89 3880	92 3180	93 2970	94 2760	95 2560	102 112	-25	89 3770	91 3070	92 2870	93 2670	94 2480	101 111		
-20	89 3950	92 3250	93 3030	94 2820	95 2620	102 112	-20	89 3840	91 3140	92 2930	93 2730	94 2530	101 111		
-15	89 4040	92 3320	93 3100	94 2890	95 2690	102 112	-15	88 3910	91 3210	92 3000	93 2790	94 2600	101 111		
-10	89 4160	93 3420	94 3200	94 2980	95 2770	102 112	-10	88 4020	91 3310	92 3090	93 2870	94 2680	101 111		
-5	90 4290	93 3530	94 3300	95 3070	95 2860	102 112	-5	89 4140	92 3400	93 3180	93 2970	94 2760	101 111		
0	90 4440	93 3660	94 3420	95 3190	96 2970	102 112	0	89 4290	92 3530	93 3300	94 3080	95 2870	101 111		
5	90 4610	93 3800	94 3560	95 3320	96 3090	102 112	5	89 4450	92 3670	93 3430	94 3200	95 2980	101 111		
10	91 4860	94 4010	95 3750	96 3500	97 3260	102 112	10	90 4680	93 3860	94 3610	95 3370	95 3140	101 111		
15	92 5120	95 4230	96 3950	96 3690	97 3440	102 112	15	91 4940	94 4070	94 3810	95 3550	96 3310	101 111		
20	93 5420	95 4470	96 4180	97 3900	98 3630	102 112	20	92 5220	94 4300	95 4020	96 3750	97 3500	101 111		
25	94 5730	96 4730	97 4420	98 4130	98 3850	102 112	25	92 5520	95 4550	96 4260	97 3970	97 3700	101 111		
30	94 6080	97 5020	98 4690	98 4380	99 4090	102 112	30	93 5850	96 4830	96 4520	97 4220	98 3930	101 111		
33	95 6320	97 5200	98 4870	99 4550	99 4240	102 112	35	94 6230	96 5130	97 4800	98 4480	98 4180	101 111		
35	95 6470	98 5340	98 4990	99 4660	99 4340	102 112	39	95 6550	97 5400	98 5050	98 4710	99 4400	101 111		

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	89 3590	90 2790	91 2600	92 2410	93 2240	99 110	-35	89 3560	89 2720	89 2480	90 2280	91 2110	98 109		
-30	89 3660	90 2850	91 2650	92 2470	92 2290	99 110	-30	89 3630	89 2770	89 2530	90 2330	91 2160	98 109		
-25	89 3730	90 2910	91 2710	91 2520	92 2340	99 110	-25	89 3690	89 2830	89 2580	90 2380	91 2210	98 109		
-20	89 3800	90 2970	90 2770	91 2580	92 2400	99 110	-20	89 3760	89 2880	89 2630	90 2430	90 2260	98 109		
-15	88 3860	90 3040	90 2840	91 2640	92 2450	99 110	-15	89 3810	89 2920	89 2680	90 2490	90 2320	98 109		
-10	88 3890	90 3120	91 2910	91 2720	92 2530	99 110	-10	88 3840	88 2950	89 2750	90 2560	90 2380	98 109		
-5	87 3910	90 3210	91 3000	91 2800	92 2600	99 110	-5	87 3870	88 3030	89 2830	90 2640	91 2450	98 109		
0	87 4040	90 3330	91 3110	92 2900	93 2700	99 110	0	86 3870	88 3140	89 2930	90 2730	91 2540	98 108		
5	88 4190	90 3450	91 3220	92 3010	93 2800	99 110	5	86 3940	88 3240	89 3030	90 2830	91 2630	98 108		
10	88 4400	91 3630	92 3390	93 3170	94 2950	99 110	10	86 4140	89 3410	90 3180	91 2970	92 2760	98 108		
15	89 4640	92 3820	93 3580	93 3340	94 3110	99 110	15	87 4350	90 3590	91 3350	91 3130	92 2910	98 108		
20	90 4890	93 4040	93 3770	94 3520	95 3280	99 110	20	88 4590	91 3790	91 3540	92 3300	93 3070	98 108		
25	91 5180	93 4270	94 3990	95 3730	95 3470	99 110	25	89 4850	91 4000	92 3740	93 3490	93 3250	97 108		
30	92 5480	94 4520	95 4230	95 3950	96 3680	99 110	30	90 5130	92 4230	93 3960	93 3690	94 3440	97 108		
35	92 5830	95 4800	95 4490	96 4190	97 3910	99 109	35	91 5450	93 4490	93 4200	94 3920	95 3650	97 108		
39	93 6120	95 5050	96 4730	96 4410	97 4110	99 109	40	91 5800	93 4780	94 4470	95 4180	95 3890	97 108		
40	93 6200	95 5110	96 4780	97 4470	97 4160	99 109	42	92 5950	94 4900	94 4580	95 4280	95 3990	97 108		
42	94 6370	96 5250	96 4910	97 4590	97 4270	99 109	44	92 6100	94 5030	95 4710	95 4390	96 4100	97 108		

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	90 3530	90 2700	90 2460	90 2240	90 2030	96 108	-35	90 3500	90 2690	90 2450	90 2230	90 2030	94 107		
-30	90 3590	90 2760	90 2510	90 2290	90 2080	96 108	-30	90 3560	90 2740	90 2500	90 2280	90 2070	94 107		
-25	89 3660	89 2810	89 2560	89 2330	89 2120	96 108	-25	90 3630	90 2790	90 2550	90 2320	90 2110	94 106		
-20	89 3720	89 2860	89 2610	89 2380	89 2160	96 108	-20	89 3690	89 2840	89 2600	89 2370	89 2150	94 106		
-15	89 3770	89 2900	89 2650	89 2420	89 2200	96 108	-15	89 3740	89 2880	89 2630	89 2400	89 2190	94 106		
-10	88 3800	88 2930	88 2670	88 2440	89 2240	96 107	-10	88 3770	88 2910	88 2660	88 2420	88 2200	94 106		
-5	87 3830	87 2940	87 2690	88 2480	89 2310	96 107	-5	88 3790	88 2920	88 2670	88 2440	88 2220	94 106		
0	86 3820	86 2960	87 2760	88 2570	89 2390	96 107	0	86 3780	86 2920	86 2670	86 2430	87 2250	94 106		
5	85 3820	87 3060	87 2850	88 2660	89 2470	96 107	5	85 3770	85 2910	86 2680	86 2500	87 2330	94 105		
10	84 3880	87 3200	88 2990	89 2790	90 2590	96 106	10	83 3720	85 3010	86 2810	87 2620	88 2430	94 105		
15	85 4080	88 3360	89 3140	89 2930	90 2730	96 106	15	83 3830	86 3150	87 2940	87 2740	88 2550	94 105		
20	86 4300	89 3550	89 3310	90 3090	91 2880	96 106	20	84 4030	87 3320	87 3100	88 2890	89 2690	94 105		
25	87 4540	89 3740	90 3500	91 3260	91 3040	96 106	25	85 4250	87 3500	88 3270	89 3050	89 2840	94 105		
30	88 4800	90 3960	91 3700	91 3450	92 3220	96 106	30	86 4490	88 3700	89 3460	89 3220	90 3000	94 105		
35	89 5090	91 4200	91 3920	92 3660	93 3410	96 106	35	87 4760	89 3920	89 3660	90 3420	91 3180	94 104		
40	89 5410	91 4470	92 4170	93 3890	93 3630	96 106	40	88 5050	90 4160	90 3890	91 3630	91 3380	94 104		
44	90 5700	92 4690	93 4390	93 4100	94 3820	96 106	44	88 5310	90 4380	91 4090	91 3810	92 3550	94 104		

Figure 4-20 (Sheet 11 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C	TAILWIND		ZERO	H E A D W I N D S				VR V2	TEMP DEG C	TAILWIND		ZERO	H E A D W I N D S				VR V2								
	10 KTS		WIND	10 KTS	20 KTS	30 KTS	10 KTS				WIND	10 KTS	20 KTS	30 KTS											
	V1	DIST	V1	DIST	V1	DIST	V1			DIST	V1	DIST	V1	DIST											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT											
-35	90	3470	90	2670	90	2440	90	2230	90	2020	92	105	-35	90	3450	90	2670	90	2440	90	2220	90	2020	92	105
-30	90	3530	90	2730	90	2490	90	2270	90	2060	92	105	-30	90	3510	90	2720	90	2480	90	2270	90	2060	92	105
-25	90	3600	90	2780	90	2540	90	2310	90	2110	92	105	-25	90	3580	90	2770	90	2530	90	2310	90	2100	92	105
-20	90	3660	90	2830	90	2590	90	2360	90	2150	92	105	-20	90	3640	90	2820	90	2580	90	2350	90	2140	92	105
-15	89	3710	89	2870	89	2620	89	2390	89	2180	92	105	-15	90	3680	90	2850	90	2610	90	2390	90	2180	91	104
-10	89	3740	89	2890	89	2640	89	2410	89	2200	92	105	-10	89	3710	89	2870	89	2630	89	2400	89	2190	91	104
-5	88	3750	88	2900	88	2660	88	2420	88	2210	92	105	-5	88	3720	88	2890	88	2640	88	2420	88	2200	91	103
0	87	3740	87	2900	87	2650	87	2420	87	2200	92	104	0	87	3710	87	2880	87	2640	87	2410	87	2190	91	103
5	86	3740	86	2890	86	2640	86	2410	86	2200	92	104	5	86	3700	86	2870	86	2630	86	2400	86	2190	91	103
10	84	3670	84	2840	84	2640	85	2460	86	2280	92	104	10	84	3640	84	2820	84	2580	84	2350	84	2140	90	102
15	82	3620	84	2960	85	2760	85	2570	86	2390	92	103	15	82	3570	82	2770	83	2580	83	2410	84	2230	90	102
20	82	3770	84	3100	85	2890	86	2700	87	2510	92	103	20	80	3530	82	2900	83	2710	84	2520	85	2340	90	101
25	83	3970	85	3270	86	3050	87	2840	87	2640	92	103	25	81	3710	83	3050	84	2840	84	2650	85	2460	90	101
30	84	4190	86	3450	87	3220	87	3000	88	2790	92	103	30	82	3910	84	3210	85	3000	85	2790	86	2600	90	101
35	85	4440	87	3650	87	3410	88	3180	89	2960	92	103	35	82	4130	85	3400	85	3170	86	2960	87	2750	90	101
40	85	4710	88	3880	88	3620	89	3380	89	3140	92	103	40	83	4380	85	3600	86	3370	87	3140	87	2920	90	101
44	86	4940	88	4070	89	3800	89	3550	90	3300	92	103	44	84	4600	86	3780	87	3530	87	3290	88	3060	90	101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS																		
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS 10 KTS V1 DIST KIAS FT 20 KTS V1 DIST KIAS FT 30 KTS V1 DIST KIAS FT			VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS 10 KTS V1 DIST KIAS FT 20 KTS V1 DIST KIAS FT 30 KTS V1 DIST KIAS FT			VR V2 KIAS					
-35	91	3440	91	2660	91	2430	91	2220	91	2020	92	106	-35	91	3430	91	2660	91	2440	91	2230	91	2030	93	107
-30	91	3500	91	2710	91	2480	91	2270	91	2060	92	106	-30	91	3490	91	2710	91	2480	91	2270	91	2070	93	107
-25	90	3560	90	2760	90	2530	90	2310	90	2100	92	106	-25	91	3550	91	2760	91	2530	91	2310	91	2110	93	107
-20	90	3620	90	2810	90	2570	90	2350	90	2150	92	106	-20	91	3610	91	2810	91	2580	91	2360	91	2150	93	107
-15	90	3660	90	2850	90	2610	90	2380	90	2170	92	105	-15	90	3650	90	2840	90	2610	90	2390	90	2180	92	106
-10	89	3690	89	2860	89	2620	89	2400	89	2190	91	104	-10	90	3670	90	2860	90	2620	90	2400	90	2190	92	105
-5	88	3700	88	2880	88	2640	88	2410	88	2200	90	103	-5	89	3680	89	2870	89	2630	89	2410	89	2200	91	104
0	87	3690	87	2860	87	2620	87	2400	87	2190	89	102	0	88	3660	88	2860	88	2620	88	2400	88	2190	89	103
5	86	3670	86	2850	86	2610	86	2390	86	2180	89	102	5	86	3650	86	2840	86	2610	86	2380	86	2180	88	101
10	84	3600	84	2800	84	2560	84	2340	84	2130	89	101	10	84	3580	84	2780	84	2550	84	2330	84	2130	87	100
15	82	3540	82	2740	82	2510	82	2290	82	2090	89	101	15	82	3510	82	2720	82	2500	82	2280	82	2080	87	99
20	80	3470	80	2710	81	2530	82	2350	83	2190	88	100	20	80	3440	80	2670	80	2440	80	2230	80	2030	87	99
25	79	3460	81	2840	82	2650	82	2470	83	2290	88	100	25	78	3370	79	2650	80	2470	80	2300	81	2130	86	98
30	79	3640	82	2990	82	2790	83	2600	84	2410	88	99	30	77	3390	79	2780	80	2590	81	2410	81	2240	86	98
35	80	3840	82	3160	83	2950	84	2740	84	2550	88	99	35	78	3570	80	2930	81	2730	81	2540	82	2360	86	97
40	81	4070	83	3350	84	3120	84	2910	85	2700	88	99	40	79	3780	81	3100	82	2890	82	2690	83	2500	86	97
44	82	4270	84	3510	84	3280	85	3050	86	2840	88	99	44	80	3960	82	3250	82	3030	83	2820	83	2620	86	97

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																				
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																						
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																					
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT																					
-35	92 3430	92 2670	92 2450	92 2240	92 2040	94 108	-35	92 3440	92 2680	92 2460	92 2260	92 2060	95 109																										
-30	91 3490	91 2720	91 2490	91 2280	91 2080	94 108	-30	92 3490	92 2730	92 2510	92 2300	92 2100	95 109																										
-25	91 3540	91 2770	91 2540	91 2320	91 2120	94 108	-25	92 3550	92 2780	92 2550	92 2340	92 2140	94 109																										
-20	91 3600	91 2810	91 2580	91 2370	91 2160	94 108	-20	91 3610	91 2830	91 2600	91 2380	91 2180	94 109																										
-15	91 3640	91 2850	91 2610	91 2390	91 2190	93 107	-15	91 3650	91 2860	91 2630	91 2410	91 2200	94 108																										
-10	90 3660	90 2860	90 2630	90 2410	90 2200	92 106	-10	90 3660	90 2870	90 2640	90 2420	90 2210	93 107																										
-5	89 3670	89 2870	89 2630	89 2410	89 2210	91 105	-5	89 3670	89 2880	89 2640	89 2420	89 2220	92 106																										
0	88 3650	88 2850	88 2620	88 2400	88 2190	90 104	0	88 3640	88 2860	88 2620	88 2410	88 2200	91 105																										
5	87 3630	87 2840	87 2600	87 2380	87 2180	89 102	5	87 3620	87 2840	87 2610	87 2390	87 2180	89 103																										
10	85 3550	85 2770	85 2540	85 2330	85 2120	86 100	10	85 3540	85 2770	85 2540	85 2330	85 2130	87 101																										
15	83 3480	83 2710	83 2480	83 2270	83 2070	85 98	15	83 3460	83 2700	83 2480	83 2270	83 2070	84 98																										
20	81 3410	81 2650	81 2430	81 2220	81 2020	85 97	20	81 3380	81 2640	81 2420	81 2210	81 2010	83 96																										
25	79 3340	79 2590	79 2370	79 2160	79 1980	85 97	25	79 3310	79 2570	79 2360	79 2150	79 1960	82 95																										
30	76 3270	77 2590	78 2410	79 2240	79 2080	84 96	30	77 3230	77 2510	77 2300	77 2100	77 1920	82 95																										
35	76 3320	78 2720	78 2530	79 2350	80 2180	84 96	35	74 3170	75 2520	76 2340	77 2180	77 2020	82 94																										
40	76 3500	78 2870	79 2670	80 2490	80 2310	84 95	40	74 3240	76 2650	77 2470	77 2290	78 2120	82 94																										
44	77 3660	79 3010	80 2800	80 2610	81 2420	84 95	44	75 3380	77 2770	77 2580	78 2390	78 2220	82 93																										

Figure 4-20 (Sheet 12 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S							
			10 KTS		20 KTS		30 KTS		VR	V2				10 KTS		20 KTS		30 KTS			
			V1	DIST	V1	DIST	V1	DIST						V1	DIST	V1	DIST	V1	DIST		
			KIAS	FT	KIAS	FT	KIAS	FT						KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	89 3830	92 3130	93 2920	94 2720	95 2530	102 112			-35	89 3810	91 3030	92 2830	93 2630	94 2440	101 112						
-30	89 3910	92 3200	93 2990	94 2780	95 2590	102 112			-30	89 3880	91 3090	92 2890	93 2690	94 2500	101 112						
-25	89 3980	92 3270	93 3060	94 2850	95 2650	102 112			-25	89 3950	91 3170	92 2960	93 2760	94 2560	101 112						
-20	89 4070	92 3350	93 3130	94 2920	95 2720	102 112			-20	89 4020	91 3240	92 3020	93 2820	94 2620	101 111						
-15	89 4210	92 3470	93 3240	94 3020	95 2810	102 112			-15	88 4070	91 3350	92 3130	93 2920	94 2720	101 111						
-10	90 4380	93 3610	94 3370	94 3150	95 2930	102 112			-10	89 4220	92 3480	93 3250	93 3030	94 2830	101 111						
-5	90 4550	93 3760	94 3510	95 3280	96 3050	102 112			-5	89 4390	92 3620	93 3390	94 3160	95 2940	101 111						
0	90 4740	93 3910	94 3660	95 3420	96 3180	102 112			0	89 4570	92 3770	93 3530	94 3290	95 3070	101 111						
5	91 4960	94 4090	95 3830	96 3580	96 3330	102 112			5	90 4780	93 3950	94 3690	95 3450	95 3210	101 111						
10	92 5220	95 4310	95 4030	96 3770	97 3510	102 112			10	91 5030	94 4150	94 3890	95 3630	96 3380	101 111						
15	93 5510	95 4550	96 4260	97 3980	98 3710	102 112			15	91 5300	94 4380	95 4100	96 3830	96 3570	101 111						
20	93 5820	96 4810	97 4500	97 4200	98 3920	102 112			20	92 5600	95 4630	96 4330	96 4050	97 3770	101 111						
25	94 6170	97 5090	97 4770	98 4460	99 4150	102 112			25	93 5930	95 4900	96 4590	97 4280	98 3990	101 111						
29	95 6480	97 5340	98 5000	99 4680	99 4360	102 112			30	94 6300	96 5200	97 4870	98 4550	98 4240	101 111						
30	95 6560	97 5410	98 5060	99 4730	99 4410	102 112			31	94 6380	96 5270	97 4930	98 4600	98 4300	101 111						
31	95 6630	97 5480	98 5120	99 4790	99 4470	102 112			35	95 6710	97 5540	98 5180	98 4840	99 4520	101 111						

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S			VR V2 KIAS								
					10 KTS	20 KTS	30 KTS							10 KTS	20 KTS	30 KTS									
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	90	3770	90	2880	90	2670	91	2490	92	2310	99	110	-35	90	3730	90	2860	90	2610	90	2370	90	2180	98	109
-30	90	3840	90	2940	90	2730	91	2540	92	2360	99	110	-30	90	3800	90	2910	90	2660	90	2420	90	2230	98	109
-25	89	3900	89	3000	90	2800	91	2600	92	2420	99	110	-25	89	3860	89	2960	89	2710	89	2470	90	2280	98	109
-20	89	3970	89	3060	90	2860	91	2670	92	2480	99	110	-20	89	3930	89	3010	89	2750	89	2520	90	2340	98	109
-15	88	3980	89	3170	90	2960	91	2760	92	2560	99	110	-15	88	3930	88	3020	89	2790	89	2600	90	2420	98	109
-10	87	3980	90	3280	91	3070	91	2860	92	2660	99	110	-10	87	3930	88	3100	89	2890	90	2700	90	2510	98	108
-5	87	4140	90	3410	91	3180	92	2970	93	2770	99	110	-5	86	3920	88	3210	89	3000	90	2800	91	2600	98	108
0	88	4300	91	3550	91	3320	92	3090	93	2880	99	110	0	86	4040	89	3340	89	3110	90	2900	91	2700	98	108
5	88	4490	91	3710	92	3470	93	3240	93	3020	99	110	5	86	4220	89	3480	90	3250	91	3040	92	2830	98	108
10	89	4720	92	3900	92	3650	93	3410	94	3170	99	110	10	87	4430	90	3660	91	3420	91	3190	92	2970	98	108
15	90	4980	92	4110	93	3840	94	3590	95	3350	99	110	15	88	4670	90	3850	91	3600	92	3360	93	3130	98	108
20	90	5260	93	4340	94	4060	94	3790	95	3530	99	110	20	89	4920	91	4070	92	3800	93	3550	93	3310	97	108
25	91	5560	94	4590	94	4290	95	4010	96	3740	99	110	25	89	5200	92	4300	92	4020	93	3750	94	3500	97	108
30	92	5900	94	4870	95	4560	96	4250	96	3970	99	109	30	90	5510	92	4550	93	4260	94	3980	94	3710	97	108
35	93	6270	95	5180	96	4840	96	4520	97	4220	99	109	35	91	5860	93	4840	94	4530	94	4230	95	3940	97	108
38	93	6510	95	5380	96	5030	97	4700	97	4380	99	109	38	92	6090	94	5020	94	4700	95	4390	95	4090	97	108
													40	92	6240	94	5150	94	4820	95	4500	96	4200	97	108
													42	92	6400	94	5290	95	4940	95	4620	96	4310	97	108

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	90	3690	90	2840	90	2590	90	2360	90	2140	96	108	-35	90	3660	90	2820	90	2580	90	2350	90	2140	94	107						
-30	90	3760	90	2890	90	2640	90	2410	90	2190	96	108	-30	90	3730	90	2870	90	2630	90	2400	90	2180	94	107						
-25	90	3820	90	2940	90	2690	90	2450	90	2230	96	108	-25	90	3790	90	2920	90	2670	90	2440	90	2220	94	107						
-20	89	3890	89	2990	89	2730	89	2490	89	2270	96	108	-20	90	3850	90	2970	90	2720	90	2480	90	2260	94	107						
-15	88	3890	88	3000	88	2740	88	2500	88	2280	96	108	-15	89	3850	89	2970	89	2720	89	2480	89	2260	94	106						
-10	87	3880	87	2990	87	2730	88	2540	88	2360	96	107	-10	87	3840	87	2970	87	2710	87	2480	87	2250	94	106						
-5	86	3870	86	3020	87	2830	88	2640	89	2450	96	107	-5	86	3830	86	2960	86	2700	86	2480	87	2300	94	106						
0	85	3860	87	3140	88	2930	88	2730	89	2540	96	107	0	85	3810	85	2950	86	2760	86	2570	87	2390	94	105						
5	84	3960	87	3270	88	3050	89	2850	89	2650	96	106	5	83	3780	85	3070	86	2870	87	2670	88	2490	94	105						
10	85	4160	88	3430	89	3210	89	2990	90	2780	96	106	10	83	3900	86	3210	86	3000	87	2800	88	2600	94	105						
15	86	4370	88	3610	89	3370	90	3150	91	2930	96	106	15	84	4090	86	3370	87	3150	88	2940	89	2740	94	105						
20	87	4610	89	3800	90	3560	91	3320	91	3090	96	106	20	85	4310	87	3550	88	3320	89	3100	89	2890	94	105						
25	87	4870	90	4020	91	3760	91	3510	92	3270	96	106	25	86	4550	88	3750	89	3510	89	3270	90	3050	94	105						
30	88	5150	91	4250	91	3980	92	3710	92	3460	96	106	30	86	4810	89	3970	89	3710	90	3460	90	3230	94	104						
35	89	5470	91	4510	92	4220	92	3940	93	3680	96	106	35	87	5100	89	4210	90	3940	90	3670	91	3420	94	104						
40	90	5820	92	4800	93	4490	93	4200	94	3920	96	106	40	88	5420	90	4480	91	4180	91	3910	92	3640	94	104						
42	90	5970	92	4930	93	4610	93	4310	94	4020	96	106	42	88	5560	90	4590	91	4290	91	4010	92	3730	94	104						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS																		
TEMP DEG C	TAILWIND		ZERO	HEADWINDS			VR V2	TEMP DEG C	TAILWIND		ZERO	HEADWINDS			VR V2										
	10 KTS		WIND	10 KTS	20 KTS	30 KTS			10 KTS		WIND	10 KTS	20 KTS	30 KTS											
	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST											
	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT											
-35	91	3640	91	2810	91	2570	91	2340	91	2130	92	105	-35	91	3610	91	2800	91	2560	91	2340	91	2130	93	106
-30	90	3700	90	2860	90	2620	90	2390	90	2170	92	105	-30	91	3680	91	2850	91	2610	91	2380	91	2170	92	106
-25	90	3760	90	2910	90	2660	90	2430	90	2210	92	105	-25	90	3740	90	2900	90	2650	90	2420	90	2210	92	105
-20	90	3820	90	2960	90	2710	90	2470	90	2250	92	105	-20	90	3790	90	2940	90	2700	90	2470	90	2250	92	105
-15	89	3820	89	2960	89	2710	89	2470	89	2250	92	105	-15	89	3790	89	2940	89	2700	89	2460	89	2250	91	104
-10	88	3810	88	2950	88	2700	88	2460	88	2240	92	105	-10	88	3780	88	2930	88	2680	88	2450	88	2240	91	103
-5	86	3790	86	2930	86	2680	86	2450	86	2230	92	104	-5	87	3760	87	2910	87	2670	87	2440	87	2220	91	103
0	85	3770	85	2920	85	2670	85	2440	85	2240	92	104	0	85	3730	85	2900	85	2650	85	2420	85	2210	90	103
5	83	3740	83	2890	84	2690	85	2510	86	2330	92	104	5	84	3700	84	2870	84	2620	84	2400	84	2180	90	102
10	82	3680	84	3010	85	2810	85	2620	86	2440	92	103	10	82	3640	82	2820	83	2630	83	2450	84	2280	90	102
15	82	3830	84	3150	85	2950	86	2750	86	2550	92	103	15	80	3590	82	2950	83	2750	84	2570	84	2390	90	101
20	83	4030	85	3320	86	3100	86	2890	87	2690	92	103	20	80	3760	83	3090	84	2890	84	2690	85	2500	90	101
25	83	4240	86	3500	86	3270	87	3050	88	2840	92	103	25	81	3960	84	3260	84	3040	85	2840	86	2640	90	101
30	84	4490	86	3700	87	3460	88	3230	88	3000	92	103	30	82	4180	84	3440	85	3220	86	3000	86	2790	90	101
35	85	4750	87	3920	88	3660	88	3420	89	3180	92	103	35	83	4420	85	3650	86	3410	86	3180	87	2960	90	101
40	86	5050	88	4160	89	3890	89	3630	90	3380	92	103	40	84	4690	86	3870	86	3610	87	3370	88	3140	90	101
42	86	5180	88	4270	89	3990	89	3720	90	3470	92	103	42	84	4810	86	3960	87	3700	87	3460	88	3220	90	101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS								
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
			KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT			
-35	91 3600	91 2790	91 2560	91 2340	91 2130	93 107	-35	92 3590	92 2790	92 2560	92 2340	92 2140	94 108		
-30	91 3660	91 2840	91 2610	91 2380	91 2170	93 107	-30	91 3650	91 2850	91 2610	91 2390	91 2180	94 108		
-25	91 3720	91 2890	91 2650	91 2420	91 2210	93 106	-25	91 3710	91 2890	91 2650	91 2430	91 2220	93 107		
-20	90 3770	90 2940	90 2690	90 2460	90 2250	93 106	-20	91 3760	91 2930	91 2690	91 2470	91 2250	93 107		
-15	89 3770	89 2930	89 2690	89 2460	89 2250	91 105	-15	90 3750	90 2930	90 2690	90 2460	90 2250	92 106		
-10	88 3750	88 2920	88 2670	88 2450	88 2230	90 103	-10	88 3730	88 2910	88 2670	88 2440	88 2230	90 104		
-5	87 3730	87 2900	87 2660	87 2430	87 2220	89 102	-5	87 3700	87 2890	87 2650	87 2430	87 2220	89 102		
0	85 3700	85 2880	85 2640	85 2410	85 2200	89 101	0	86 3680	86 2870	86 2630	86 2400	86 2190	87 101		
5	84 3660	84 2850	84 2610	84 2380	84 2170	89 101	5	84 3630	84 2830	84 2600	84 2370	84 2170	87 100		
10	82 3600	82 2800	82 2560	82 2340	82 2130	89 101	10	82 3570	82 2780	82 2550	82 2330	82 2120	87 99		
15	80 3550	80 2760	81 2570	82 2400	82 2230	88 100	15	80 3510	80 2730	80 2500	80 2280	80 2080	87 99		
20	78 3510	81 2890	81 2700	82 2510	83 2330	88 100	20	78 3450	79 2690	79 2510	80 2340	81 2170	86 98		
25	79 3680	81 3030	82 2830	83 2640	83 2450	88 99	25	77 3430	79 2820	80 2630	81 2450	81 2280	86 98		
30	80 3890	82 3200	83 2990	83 2780	84 2590	88 99	30	78 3610	80 2970	80 2770	81 2580	82 2390	86 97		
35	81 4110	83 3380	84 3160	84 2940	85 2740	88 99	35	79 3810	81 3140	81 2930	82 2730	82 2530	86 97		
40	82 4360	84 3590	84 3350	85 3120	85 2910	88 99	40	79 4040	81 3320	82 3100	83 2890	83 2680	86 97		
42	82 4460	84 3680	85 3430	85 3200	86 2980	88 99	42	80 4140	82 3400	82 3180	83 2960	83 2750	86 97		

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
			KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT			
-35	92 3590	92 2800	92 2570	92 2350	92 2150	95 109	-35	92 3600	92 2820	92 2590	92 2370	92 2170	95 110		
-30	92 3650	92 2850	92 2620	92 2400	92 2190	94 109	-30	92 3660	92 2870	92 2640	92 2420	92 2210	95 110		
-25	91 3700	91 2900	91 2660	91 2440	91 2230	94 108	-25	92 3710	92 2910	92 2680	92 2450	92 2250	95 109		
-20	91 3750	91 2940	91 2700	91 2480	91 2260	94 108	-20	92 3760	92 2950	92 2720	92 2490	92 2280	95 109		
-15	90 3740	90 2930	90 2690	90 2470	90 2260	93 107	-15	90 3740	90 2940	90 2700	90 2480	90 2270	93 108		
-10	89 3720	89 2910	89 2670	89 2450	89 2240	91 105	-10	89 3710	89 2910	89 2680	89 2460	89 2250	92 106		
-5	87 3690	87 2880	87 2650	87 2430	87 2220	90 103	-5	88 3680	88 2890	88 2650	88 2430	88 2230	90 104		
0	86 3660	86 2860	86 2620	86 2400	86 2200	88 102	0	86 3640	86 2860	86 2620	86 2410	86 2200	89 103		
5	84 3610	84 2820	84 2590	84 2370	84 2160	86 100	5	85 3590	85 2810	85 2580	85 2370	85 2160	87 100		
10	83 3540	83 2760	83 2530	83 2320	83 2120	85 98	10	83 3520	83 2750	83 2530	83 2320	83 2110	84 98		
15	81 3480	81 2710	81 2480	81 2270	81 2070	85 97	15	81 3450	81 2700	81 2470	81 2260	81 2060	83 96		
20	79 3410	79 2650	79 2430	79 2220	79 2020	85 97	20	79 3380	79 2640	79 2420	79 2210	79 2010	82 95		
25	77 3350	77 2620	78 2450	78 2280	79 2110	84 96	25	77 3310	77 2580	77 2360	77 2160	77 1960	82 95		
30	75 3350	78 2750	78 2570	79 2390	79 2220	84 96	30	75 3250	75 2550	76 2380	77 2210	77 2050	82 94		
35	76 3530	78 2900	79 2710	79 2520	80 2340	84 95	35	74 3270	76 2680	76 2500	77 2320	78 2150	82 94		
40	77 3740	79 3070	80 2870	80 2670	81 2480	84 95	40	75 3450	77 2830	77 2630	78 2450	78 2270	82 93		
42	77 3820	79 3140	80 2930	81 2730	81 2540	84 95	42	75 3530	77 2890	77 2700	78 2510	79 2330	82 93		

Figure 4-20 (Sheet 14 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS																
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2						
	10 KTS		10 KTS		10 KTS	20 KTS	30 KTS				10 KTS		10 KTS		10 KTS	20 KTS	30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1				DIST	V1	DIST	V1	DIST	V1	DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT								
-35	89	3970	92	3260	93	3050	94	2840	95	2640	102	112	-35	89	3930	91	3160	92	2950	93	2750	94	2550	101	112
-30	89	4090	92	3370	93	3140	94	2930	95	2720	102	112	-30	88	3970	91	3250	92	3040	93	2830	94	2630	101	111
-25	89	4210	92	3470	93	3240	94	3020	95	2810	102	112	-25	88	4070	91	3350	92	3130	93	2920	94	2710	101	111
-20	89	4350	93	3580	93	3350	94	3130	95	2910	102	112	-20	88	4200	91	3460	92	3230	93	3010	94	2810	101	111
-15	90	4520	93	3730	94	3480	95	3250	95	3030	102	112	-15	89	4360	92	3590	93	3360	94	3140	94	2920	101	111
-10	90	4690	93	3880	94	3630	95	3380	96	3150	102	112	-10	89	4530	92	3740	93	3500	94	3260	95	3040	101	111
-5	91	4890	94	4040	94	3780	95	3530	96	3290	102	112	-5	90	4710	93	3890	93	3640	94	3400	95	3170	101	111
0	91	5090	94	4210	95	3940	96	3680	96	3430	102	112	0	90	4910	93	4050	94	3790	95	3540	95	3300	101	111
5	92	5340	94	4410	95	4130	96	3860	97	3600	102	112	5	91	5140	93	4250	94	3980	95	3720	96	3470	101	111
10	92	5620	95	4640	96	4350	97	4060	97	3790	102	112	10	91	5410	94	4470	95	4190	96	3910	96	3650	101	111
15	93	5920	96	4900	96	4590	97	4290	98	4000	102	112	15	92	5700	95	4720	95	4410	96	4130	97	3850	101	111
20	94	6270	96	5190	97	4860	98	4540	98	4230	102	112	20	93	6030	95	4990	96	4670	97	4360	97	4070	101	111
25	94	6660	97	5500	98	5150	98	4810	99	4490	102	112	25	93	6400	96	5290	97	4950	97	4630	98	4320	101	111
27	95	6820	97	5640	98	5280	99	4930	99	4610	102	112	27	94	6550	96	5420	97	5070	98	4740	98	4420	101	111
													30	94	6800	97	5620	97	5260	98	4920	98	4590	101	111

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2				
	10 KTS		10 KTS		10 KTS	20 KTS	30 KTS	10 KTS					10 KTS		10 KTS	20 KTS	30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT						
-35	89	3890	89	2980	90	2790	91	2600	92	2410	99	110	-35	89	3840	89	2950	89	2690	89	2450	90	2280	98	109
-30	89	3930	89	3070	90	2870	91	2670	92	2490	99	110	-30	89	3880	89	2980	89	2720	89	2520	90	2350	98	109
-25	88	3960	89	3170	90	2950	91	2750	92	2560	99	110	-25	88	3920	88	3010	89	2790	89	2600	90	2420	98	109
-20	87	3990	90	3260	90	3050	91	2840	92	2650	99	110	-20	87	3950	88	3080	89	2880	90	2680	90	2500	98	109
-15	87	4100	90	3380	91	3160	92	2950	92	2740	99	110	-15	86	3950	88	3190	89	2980	90	2780	91	2590	98	108
-10	87	4260	90	3510	91	3290	92	3070	93	2860	99	110	-10	85	4010	88	3310	89	3090	90	2880	91	2680	98	108
-5	88	4430	91	3660	92	3420	92	3190	93	2980	99	110	-5	86	4160	89	3430	90	3210	90	3000	91	2790	98	108
0	88	4610	91	3810	92	3560	93	3330	93	3100	99	110	0	86	4330	89	3570	90	3340	91	3120	92	2910	98	108
5	89	4830	92	3990	92	3730	93	3490	94	3250	99	110	5	87	4530	90	3740	91	3500	91	3270	92	3050	98	108
10	90	5070	92	4200	93	3930	94	3670	94	3420	99	110	10	88	4760	90	3930	91	3680	92	3440	93	3200	98	108
15	90	5350	93	4420	94	4140	94	3870	95	3610	99	110	15	88	5010	91	4140	92	3870	92	3620	93	3380	97	108
20	91	5650	93	4670	94	4370	95	4090	96	3810	99	110	20	89	5290	92	4370	92	4090	93	3820	94	3570	97	108
25	92	5980	94	4950	95	4630	95	4330	96	4040	99	109	25	90	5590	92	4630	93	4330	94	4050	94	3770	97	108
30	93	6360	95	5250	95	4920	96	4600	97	4290	99	109	30	91	5940	93	4910	94	4600	94	4300	95	4010	97	108
34	93	6680	95	5520	96	5170	97	4830	97	4510	99	109	34	91	6240	93	5160	94	4830	95	4510	95	4210	97	108
											35	91	6310	94	5220	94	4890	95	4570	95	4260	95	4260	97	108
											38	92	6560	94	5420	95	5070	95	4740	96	4430	96	4430	97	108

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2
	10 KTS		10 KTS		10 KTS	20 KTS	30 KTS	10 KTS		10 KTS					10 KTS	20 KTS	30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT						
-35	90	3810	90	2930	90	2670	90	2440	90	2220	96	108	-35	90	3770	90	2910	90	2660	90	2430	90	2210	94	107
-30	89	3840	89	2960	89	2700	89	2460	89	2240	96	108	-30	89	3810	89	2940	89	2690	89	2450	89	2230	94	106
-25	88	3880	88	2980	88	2730	88	2490	88	2280	96	108	-25	89	3840	89	2960	89	2710	89	2470	89	2250	94	106
-20	87	3900	87	3000	87	2750	88	2520	89	2350	96	107	-20	88	3860	88	2980	88	2730	88	2490	88	2270	94	106
-15	86	3900	86	3000	87	2810	88	2620	89	2440	96	107	-15	86	3860	86	2980	86	2720	86	2490	87	2290	94	106
-10	85	3900	86	3110	87	2910	88	2710	89	2520	96	107	-10	85	3850	85	2970	85	2730	86	2550	87	2370	94	105
-5	84	3910	87	3230	88	3020	88	2810	89	2620	96	106	-5	84	3840	85	3040	86	2840	87	2650	87	2460	94	105
0	84	4060	87	3350	88	3130	89	2920	90	2720	96	106	0	83	3830	85	3150	86	2940	87	2740	88	2550	94	105
5	85	4250	88	3510	89	3280	89	3060	90	2850	96	106	5	83	3980	86	3280	86	3070	87	2860	88	2670	94	105
10	86	4460	88	3680	89	3440	90	3210	91	3000	96	106	10	84	4170	86	3440	87	3220	88	3000	89	2800	94	105
15	87	4690	89	3870	90	3620	90	3380	91	3150	96	106	15	85	4380	87	3620	88	3390	88	3160	89	2940	94	105
20	87	4940	90	4090	90	3820	91	3570	92	3330	96	106	20	85	4620	88	3820	88	3570	89	3330	90	3110	94	105
25	88	5230	90	4320	91	4040	92	3780	92	3520	96	106	25	86	4880	88	4030	89	3770	90	3520	90	3280	94	104
30	89	5540	91	4580	92	4290	92	4000	93	3740	96	106	30	87	5170	89	4270	90	3990	90	3730	91	3480	94	104
35	90	5890	92	4870	92	4560	93	4260	93	3970	96	106	35	88	5490	90	4540	90	4240	91	3960	91	3690	94	104
38	90	6110	92	5050	93	4730	93	4420	94	4120	96	106	40	89	5840	90	4820	91	4510	91	4220	92	3940	94	104
40	90	6270	92	5180	93	4850	93	4530	94	4230	96	106													

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	90 3740	90 2890	90 2650	90 2420	90 2200	92 105	-35	90 3720	90 2880	90 2640	90 2410	90 2200	92 105
-30	89 3780	89 2920	89 2670	89 2440	89 2220	92 105	-30	90 3750	90 2910	90 2660	90 2430	90 2220	91 105
-25	89 3810	89 2940	89 2690	89 2460	89 2240	92 105	-25	89 3780	89 2930	89 2680	89 2450	89 2240	91 104
-20	88 3830	88 2960	88 2710	88 2480	88 2260	92 105	-20	88 3800	88 2940	88 2700	88 2470	88 2250	91 103
-15	87 3820	87 2960	87 2710	87 2470	87 2250	92 104	-15	87 3790	87 2940	87 2690	87 2460	87 2240	91 103
-10	86 3810	86 2950	86 2700	86 2460	86 2250	92 104	-10	86 3770	86 2930	86 2680	86 2450	86 2230	91 103
-5	84 3800	84 2940	84 2690	85 2480	85 2310	92 104	-5	84 3760	84 2920	84 2670	84 2440	84 2220	90 103
0	83 3780	83 2950	84 2760	85 2570	86 2390	92 104	0	83 3740	83 2900	83 2660	83 2430	84 2240	90 102
5	81 3740	84 3080	84 2880	85 2680	86 2500	92 103	5	82 3700	82 2880	82 2690	83 2510	84 2340	90 102
10	82 3900	84 3220	85 3010	86 2800	86 2610	92 103	10	80 3660	82 3010	83 2810	84 2620	84 2440	90 101
15	82 4090	85 3380	86 3160	86 2950	87 2740	92 103	15	80 3820	83 3150	83 2940	84 2740	85 2550	90 101
20	83 4310	86 3560	86 3330	87 3100	88 2890	92 103	20	81 4020	83 3310	83 3100	85 2890	85 2690	90 101
25	84 4550	86 3760	87 3510	88 3280	88 3050	92 103	25	82 4240	84 3490	85 3270	85 3050	86 2840	90 101
30	85 4810	87 3980	88 3720	88 3470	89 3230	92 103	30	83 4480	85 3700	85 3460	86 3220	87 3000	90 101
35	86 5110	88 4220	88 3940	89 3680	89 3430	92 103	35	84 4750	86 3920	86 3660	87 3420	87 3180	90 101
40	87 5430	88 4480	89 4190	89 3910	90 3650	92 103	40	84 5040	86 4160	87 3890	87 3630	88 3380	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	91 3700	91 2880	91 2640	91 2410	91 2200	93 106	-35	91 3690	91 2880	91 2640	91 2420	91 2210	93 107
-30	90 3730	90 2900	90 2660	90 2430	90 2220	92 105	-30	90 3710	90 2900	90 2660	90 2430	90 2220	93 106
-25	89 3750	89 2920	89 2680	89 2450	89 2240	91 105	-25	90 3740	90 2920	90 2680	90 2450	90 2240	92 105
-20	88 3770	88 2930	88 2690	88 2460	88 2250	90 104	-20	89 3750	89 2930	89 2690	89 2460	89 2250	91 104
-15	87 3760	87 2920	87 2680	87 2450	87 2240	89 102	-15	88 3730	88 2910	88 2670	88 2450	88 2240	89 103
-10	86 3740	86 2910	86 2670	86 2440	86 2230	89 102	-10	86 3720	86 2900	86 2660	86 2430	86 2220	88 101
-5	85 3720	85 2900	85 2650	85 2430	85 2210	89 101	-5	85 3690	85 2880	85 2640	85 2420	85 2210	87 100
0	83 3700	83 2880	83 2640	83 2410	83 2200	89 101	0	84 3670	84 2860	84 2620	84 2400	84 2190	87 100
5	82 3660	82 2840	82 2610	82 2380	82 2180	89 100	5	82 3630	82 2820	82 2590	82 2370	82 2160	87 99
10	80 3610	80 2810	81 2630	82 2450	82 2280	88 100	10	80 3570	80 2780	80 2550	80 2330	80 2120	87 99
15	78 3570	81 2940	81 2750	82 2560	83 2380	88 100	15	78 3520	78 2740	79 2560	80 2380	81 2210	86 98
20	79 3740	81 3080	82 2880	83 2680	83 2490	88 99	20	77 3490	79 2870	80 2680	80 2500	81 2320	86 98
25	80 3940	82 3250	83 3030	83 2830	84 2630	88 99	25	77 3660	80 3010	80 2810	81 2620	82 2430	86 97
30	81 4160	83 3430	83 3210	84 2990	85 2780	88 99	30	78 3860	80 3180	81 2970	82 2770	82 2570	86 97
35	81 4410	83 3630	84 3400	85 3170	85 2950	88 99	35	79 4080	81 3360	82 3140	82 2930	83 2720	86 97
40	82 4670	84 3850	85 3600	85 3360	86 3130	88 99	40	80 4330	82 3560	82 3330	83 3100	84 2890	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	91 3690	91 2880	91 2650	91 2430	91 2220	94 108	-35	92 3690	92 2900	92 2660	92 2440	92 2240	95 109
-30	91 3710	91 2900	91 2660	91 2440	91 2230	93 107	-30	91 3710	91 2910	91 2680	91 2460	91 2250	94 108
-25	90 3730	90 2920	90 2680	90 2460	90 2250	93 107	-25	90 3730	90 2930	90 2690	90 2470	90 2260	93 108
-20	89 3740	89 2930	89 2690	89 2460	89 2250	92 105	-20	89 3740	89 2930	89 2700	89 2470	89 2270	92 107
-15	88 3720	88 2910	88 2670	88 2450	88 2240	90 104	-15	88 3710	88 2910	88 2680	88 2460	88 2250	91 105
-10	87 3700	87 2890	87 2660	87 2430	87 2220	89 102	-10	87 3690	87 2890	87 2660	87 2440	87 2230	89 103
-5	85 3670	85 2870	85 2640	85 2410	85 2210	87 101	-5	86 3660	86 2870	86 2640	86 2420	86 2210	88 102
0	84 3650	84 2850	84 2620	84 2390	84 2190	86 99	0	84 3630	84 2840	84 2610	84 2390	84 2190	86 100
5	82 3600	82 2810	82 2580	82 2360	82 2150	85 98	5	83 3570	83 2800	83 2570	83 2350	83 2150	84 98
10	81 3540	81 2760	81 2530	81 2320	81 2110	85 97	10	81 3510	81 2750	81 2520	81 2310	81 2110	83 96
15	79 3480	79 2710	79 2490	79 2270	79 2070	85 97	15	79 3450	79 2690	79 2470	79 2260	79 2060	82 95
20	77 3420	77 2670	78 2490	78 2320	79 2150	84 96	20	77 3390	77 2640	77 2420	77 2210	77 2010	82 95
25	75 3400	77 2800	78 2610	79 2430	79 2260	84 96	25	75 3320	75 2590	76 2420	76 2250	77 2080	82 94
30	76 3580	78 2940	79 2740	79 2550	80 2370	84 95	30	74 3310	76 2720	76 2540	77 2360	78 2190	82 94
35	77 3780	79 3110	79 2900	80 2700	80 2510	84 95	35	74 3480	76 2860	77 2670	77 2480	78 2300	82 93
40	78 4000	80 3290	80 3070	81 2860	81 2660	84 95	40	75 3680	77 3030	78 2830	78 2630	79 2440	82 93

Figure 4-20 (Sheet 16 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS																
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR VZ KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR VZ KIAS								
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS									
	V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	89	4160	92	3430	93	3200	94	2990	95	2780	102	112	-35	88	4030	91	3310	92	3090	93	2890	94	2690	101	111
-30	89	4320	93	3560	93	3330	94	3110	95	2890	102	112	-30	88	4170	91	3440	92	3210	93	3000	94	2790	101	111
-25	90	4490	93	3710	94	3470	95	3230	95	3010	102	112	-25	89	4340	92	3570	93	3340	93	3120	94	2900	101	111
-20	90	4670	93	3850	94	3610	95	3370	96	3140	102	112	-20	89	4500	92	3720	93	3480	94	3240	95	3020	101	111
-15	90	4850	93	4010	94	3750	95	3500	96	3270	102	112	-15	89	4680	92	3860	93	3620	94	3380	95	3150	101	111
-10	91	5050	94	4170	95	3900	95	3650	96	3400	102	112	-10	90	4860	93	4020	94	3760	94	3510	95	3280	101	111
-5	91	5260	94	4350	95	4070	96	3800	97	3550	102	112	-5	90	5060	93	4190	94	3920	95	3660	95	3420	101	111
0	92	5480	94	4530	95	4250	96	3970	97	3700	102	112	0	91	5280	93	4370	94	4090	95	3820	96	3570	101	111
5	92	5750	95	4760	96	4460	97	4170	97	3890	102	112	5	91	5540	94	4580	95	4290	95	4010	96	3740	101	111
10	93	6040	95	5000	96	4690	97	4380	98	4090	102	112	10	92	5810	94	4810	95	4510	96	4220	97	3940	101	111
15	93	6390	96	5290	97	4960	98	4630	98	4330	102	112	15	92	6140	95	5090	96	4760	97	4450	97	4160	101	111
20	94	6770	97	5600	97	5240	98	4900	99	4580	102	112	20	93	6500	96	5380	96	5040	97	4720	98	4400	101	111
22	94	6930	97	5730	98	5370	98	5020	99	4690	102	112	22	93	6660	96	5510	97	5160	97	4830	98	4510	101	111
													25	94	6910	96	5710	97	5350	98	5000	98	4670	101	111
													26	94	6990	96	5790	97	5420	98	5070	98	4730	101	111

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2										
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS							10 KTS	20 KTS	30 KTS														
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT				V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT														
-35	88	3990	89	3130	90	2920	91	2720	92	2540	99	110	-35	89	3940	89	3030	89	2760	89	2570	90	2390	98	109						
-30	87	3990	90	3240	90	3030	91	2830	92	2630	99	110	-30	87	3950	88	3060	89	2860	90	2670	90	2480	98	109						
-25	87	4080	90	3370	91	3150	92	2930	92	2730	99	110	-25	86	3950	88	3170	89	2970	90	2770	91	2570	98	108						
-20	87	4240	90	3500	91	3270	92	3050	93	2840	99	110	-20	85	3990	88	3290	89	3070	90	2870	91	2670	98	108						
-15	88	4400	91	3630	91	3400	92	3170	93	2960	99	110	-15	86	4140	89	3410	89	3190	90	2980	91	2770	98	108						
-10	88	4570	91	3780	92	3530	92	3300	93	3080	99	110	-10	86	4290	89	3550	90	3320	91	3100	91	2880	98	108						
-5	88	4760	91	3930	92	3680	93	3440	94	3210	99	110	-5	87	4460	89	3690	90	3450	91	3220	92	3000	98	108						
0	89	4950	92	4100	92	3840	93	3590	94	3340	99	110	0	87	4650	90	3840	91	3600	91	3360	92	3130	98	108						
5	89	5190	92	4300	93	4020	94	3760	94	3510	99	110	5	88	4870	90	4030	91	3770	92	3520	92	3290	98	108						
10	90	5450	93	4510	93	4220	94	3950	95	3690	99	110	10	88	5100	91	4230	92	3960	92	3700	93	3450	97	108						
15	91	5750	93	4760	94	4460	95	4170	95	3890	99	110	15	89	5380	91	4460	92	4170	93	3900	93	3640	97	108						
20	91	6080	94	5040	95	4720	95	4410	96	4120	99	109	20	90	5690	92	4710	93	4410	93	4120	94	3850	97	108						
25	92	6450	95	5340	95	5000	96	4680	96	4370	99	109	25	90	6030	93	4990	93	4670	94	4370	95	4080	97	108						
26	92	6530	95	5410	95	5060	96	4740	97	4420	99	109	30	91	6410	93	5300	94	4960	95	4640	95	4330	97	108						
30	93	6860	95	5680	96	5320	96	4970	97	4650	99	109	33	92	6650	94	5500	94	5150	95	4820	95	4500	97	108						

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2						
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS						10 KTS	20 KTS	30 KTS									
	V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT				V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	89	3900	89	3000	89	2740	89	2500	89	2280	96	108	-35	89	3860	89	2980	89	2730	89	2490	89	2270	94	106
-30	88	3900	88	3010	88	2750	88	2510	89	2340	96	107	-30	88	3860	88	2980	88	2730	88	2490	88	2270	94	106
-25	86	3910	86	3010	87	2790	88	2610	89	2420	96	107	-25	87	3860	87	2980	87	2730	87	2490	87	2280	94	106
-20	85	3910	86	3100	87	2900	88	2700	89	2510	96	107	-20	86	3860	86	2980	86	2730	86	2540	87	2360	94	106
-15	84	3910	87	3210	87	3000	88	2800	89	2610	96	107	-15	84	3860	85	3020	86	2820	86	2630	87	2450	94	105
-10	84	4030	87	3330	88	3110	89	2900	89	2700	96	106	-10	83	3860	85	3130	86	2920	87	2730	87	2540	94	105
-5	85	4190	87	3460	88	3230	89	3020	90	2810	96	106	-5	83	3930	85	3240	86	3030	87	2830	88	2630	94	105
0	85	4350	88	3600	89	3370	89	3140	90	2930	96	106	0	83	4080	86	3370	87	3150	87	2940	88	2740	94	105
5	86	4560	88	3770	89	3530	90	3290	90	3070	96	106	5	84	4260	86	3520	87	3300	88	3080	88	2870	94	105
10	86	4780	89	3950	90	3700	90	3460	91	3220	96	106	10	84	4470	87	3690	88	3450	88	3230	89	3010	94	105
15	87	5030	89	4160	90	3900	91	3640	92	3400	96	106	15	85	4700	87	3890	88	3640	89	3400	89	3170	94	105
20	88	5310	90	4400	91	4120	91	3850	92	3590	96	106	20	86	4960	88	4100	89	3840	89	3590	90	3340	94	104
25	89	5620	91	4660	91	4360	92	4070	93	3800	96	106	25	87	5240	89	4340	89	4060	90	3790	91	3540	94	104
30	89	5970	91	4940	92	4630	93	4330	93	4040	96	106	30	87	5560	89	4600	90	4310	91	4020	91	3760	94	104
33	90	6200	92	5120	92	4800	93	4490	93	4190	96	106	35	88	5910	90	4890	91	4580	91	4280	92	4000	94	104
35	90	6350	92	5250	93	4920	93	4600	94	4290	96	106	37	89	6060	90	5010	91	4690	91	4390	92	4090	94	104
37	90	6510	92	5390	93	5040	93	4720	94	4400	96	106	38	89	6130	91	5070	91	4750	92	4440	92	4150	94	104

Figure 4-20 (Sheet 17 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2		TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT											
-35	90	3780	90	2940	90	2700	90	2470	90	2250	92 105	-35	90	3760	90	2940	90	2700	90	2470	90	2260	92 106																
-30	89	3770	89	2940	89	2690	89	2460	89	2250	90 104	-30	89	3750	89	2930	89	2690	89	2460	89	2250	91 105																
-25	87	3770	87	2930	87	2690	87	2460	87	2240	89 102	-25	88	3740	88	2920	88	2680	88	2450	88	2240	90 103																
-20	86	3760	86	2920	86	2680	86	2450	86	2240	89 102	-20	87	3730	87	2910	87	2670	87	2450	87	2230	88 102																
-15	85	3750	85	2920	85	2670	85	2450	85	2230	89 101	-15	85	3720	85	2900	85	2660	85	2440	85	2230	87 100																
-10	84	3740	84	2910	84	2670	84	2440	84	2220	89 101	-10	84	3710	84	2890	84	2650	84	2430	84	2220	87 100																
-5	83	3730	83	2900	83	2650	83	2430	83	2210	89 101	-5	83	3690	83	2880	83	2640	83	2420	83	2200	87 99																
0	81	3710	81	2880	81	2640	81	2410	82	2240	89 100	0	82	3670	82	2860	82	2620	82	2400	82	2190	87 99																
5	80	3670	80	2880	81	2690	82	2510	82	2330	88 100	5	80	3630	80	2830	80	2590	80	2370	80	2170	87 99																
10	78	3630	80	3000	81	2800	82	2610	83	2430	88 100	10	78	3590	78	2800	79	2610	80	2430	80	2260	86 98																
15	79	3800	81	3140	82	2930	82	2740	83	2540	88 99	15	77	3550	79	2920	80	2730	80	2550	81	2370	86 98																
20	80	4000	82	3300	82	3080	83	2880	84	2680	88 99	20	77	3710	79	3060	80	2860	81	2670	81	2480	86 97																
25	80	4220	82	3480	83	3260	84	3040	84	2830	88 99	25	78	3910	80	3230	81	3010	81	2810	82	2620	86 97																
30	81	4460	83	3680	84	3450	84	3220	85	2990	88 99	30	79	4130	81	3410	82	3190	82	2970	83	2770	86 97																
35	82	4730	84	3900	84	3650	85	3410	86	3180	88 99	35	80	4380	82	3610	82	3370	83	3150	83	2930	86 97																
38	82	4900	84	4040	85	3780	85	3530	86	3290	88 99	38	80	4530	82	3740	83	3500	83	3260	84	3040	86 97																

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-35	91	3760	91	2940	91	2700	91	2480	91	2270	93	107	-35	91	3760	91	2950	91	2710	91	2490	91	2280	94	108														
-30	89	3740	89	2930	89	2690	89	2470	89	2260	92	106	-30	90	3740	90	2940	90	2700	90	2480	90	2270	92	107														
-25	88	3730	88	2920	88	2680	88	2460	88	2250	90	104	-25	88	3720	88	2920	88	2690	88	2460	88	2260	91	105														
-20	87	3710	87	2910	87	2670	87	2450	87	2240	89	103	-20	87	3700	87	2910	87	2670	87	2450	87	2240	90	104														
-15	86	3700	86	2890	86	2660	86	2430	86	2230	88	101	-15	86	3690	86	2890	86	2660	86	2440	86	2230	88	102														
-10	84	3680	84	2880	84	2640	84	2420	84	2210	86	100	-10	85	3670	85	2870	85	2640	85	2420	85	2210	87	101														
-5	83	3660	83	2860	83	2630	83	2410	83	2200	85	98	-5	84	3640	84	2850	84	2620	84	2400	84	2200	85	99														
0	82	3640	82	2840	82	2610	82	2390	82	2180	85	98	0	82	3610	82	2830	82	2600	82	2380	82	2180	84	97														
5	80	3590	80	2810	80	2570	80	2350	80	2150	85	97	5	81	3560	81	2790	81	2560	81	2350	81	2140	83	96														
10	79	3550	79	2770	79	2540	79	2320	79	2120	85	97	10	79	3520	79	2750	79	2520	79	2310	79	2110	82	95														
15	77	3490	77	2720	77	2540	78	2360	79	2200	84	96	15	77	3460	77	2700	77	2470	77	2260	77	2060	82	95														
20	75	3450	77	2840	78	2660	79	2470	79	2300	84	96	20	75	3400	75	2650	76	2460	76	2290	77	2120	82	94														
25	76	3620	78	2980	78	2790	79	2600	80	2410	84	95	25	73	3360	75	2760	76	2580	77	2400	77	2230	82	94														
30	77	3820	79	3150	79	2940	80	2740	80	2550	84	95	30	74	3530	76	2900	77	2710	77	2520	78	2340	82	93														
35	77	4040	79	3330	80	3110	80	2900	81	2700	84	95	35	75	3720	77	3070	77	2860	78	2670	78	2480	82	93														
38	78	4180	80	3450	80	3220	81	3000	81	2790	84	95	38	75	3850	77	3170	78	2960	78	2760	79	2560	82	93														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S									
					10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS					
					V1 DIST		V1 DIST		V1 DIST							V1 DIST		V1 DIST		V1 DIST					
					KIAS FT		KIAS FT		KIAS FT							KIAS FT		KIAS FT		KIAS FT		KIAS FT			
-35	90	4470	93	3680	94	3440	95	3220	95	3000	102	112	-35	89	4310	92	3550	93	3320	93	3100	94	2890	101	111
-30	90	4640	93	3830	94	3580	95	3350	96	3120	102	112	-30	89	4480	92	3700	93	3460	94	3230	95	3010	101	111
-25	90	4830	93	3990	94	3730	95	3480	96	3250	102	112	-25	89	4650	92	3840	93	3600	94	3360	95	3130	101	111
-20	91	5020	94	4150	95	3880	95	3630	96	3380	102	112	-20	90	4840	93	4000	93	3740	94	3500	95	3260	101	111
-15	91	5220	94	4320	95	4040	96	3780	96	3520	102	112	-15	90	5030	93	4160	94	3890	95	3640	95	3390	101	111
-10	91	5430	94	4500	95	4210	96	3940	97	3670	102	112	-10	90	5230	93	4330	94	4050	95	3790	96	3540	101	111
-5	92	5660	95	4690	95	4390	96	4100	97	3830	102	112	-5	91	5450	94	4510	94	4230	95	3950	96	3690	101	111
0	92	5910	95	4900	96	4590	97	4290	97	4010	102	112	0	91	5690	94	4720	95	4420	95	4130	96	3860	101	111
5	93	6200	95	5140	96	4810	97	4500	98	4200	102	112	5	92	5960	94	4940	95	4630	96	4330	97	4040	101	111
10	93	6520	96	5400	97	5060	97	4740	98	4430	102	112	10	92	6270	95	5200	96	4870	96	4560	97	4250	101	111
15	94	6900	97	5720	97	5360	98	5010	99	4690	102	112	15	93	6630	95	5490	96	5150	97	4820	98	4500	101	111
16	94	6980	97	5780	97	5420	98	5070	99	4740	102	112	18	93	6860	96	5690	97	5330	97	4990	98	4660	101	111
18	94	7150	97	5920	98	5550	98	5190	99	4850	102	112	20	94	7030	96	5820	97	5460	97	5100	98	4770	101	111
													22	94	7200	96	5970	97	5590	98	5230	98	4890	101	111

WEIGHT = 15500 LBS											WEIGHT = 15000 LBS																
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR KIAS	VZ KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR KIAS	VZ KIAS		
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS					
					V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST			V1	DIST
					KIAS	FT	KIAS	FT	KIAS	FT								KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT
-35	87	4060	90	3350	91	3130	91	2920	92	2720	99	110	-35	86	3950	88	3160	89	2950	90	2750	91	2560	98	108		
-30	87	4220	90	3480	91	3250	92	3030	93	2820	99	110	-30	85	3970	88	3270	89	3060	90	2850	91	2660	98	108		
-25	88	4380	90	3610	91	3380	92	3160	93	2940	99	110	-25	86	4110	89	3390	89	3170	90	2960	91	2760	98	108		
-20	88	4550	91	3760	92	3510	92	3280	93	3060	99	110	-20	86	4270	89	3530	90	3300	90	3080	91	2870	98	108		
-15	88	4720	91	3910	92	3660	93	3410	93	3180	99	110	-15	86	4430	89	3660	90	3430	91	3200	92	2980	98	108		
-10	89	4910	91	4070	92	3810	93	3560	94	3320	99	110	-10	87	4610	89	3810	90	3570	91	3330	92	3110	98	108		
-5	89	5110	92	4230	93	3960	93	3710	94	3460	99	110	-5	87	4790	90	3970	91	3710	91	3470	92	3240	98	108		
0	89	5340	92	4420	93	4140	94	3870	94	3610	99	110	0	88	5000	90	4140	91	3880	92	3630	92	3380	98	108		
5	90	5590	93	4630	93	4340	94	4060	95	3790	99	110	5	88	5230	91	4330	91	4060	92	3800	93	3540	97	108		
10	91	5870	93	4870	94	4560	95	4260	95	3980	99	110	10	89	5490	91	4550	92	4260	93	3990	93	3720	97	108		
15	91	6200	94	5140	94	4820	95	4510	96	4210	99	109	15	89	5790	92	4810	93	4500	93	4210	94	3930	97	108		
20	92	6570	94	5440	95	5100	96	4770	96	4460	99	109	20	90	6130	92	5080	93	4760	94	4460	94	4160	97	108		
22	92	6730	95	5570	95	5220	96	4880	96	4560	99	109	25	91	6510	93	5390	94	5050	94	4730	95	4420	97	108		
25	93	6970	95	5780	96	5410	96	5070	97	4730	99	109	29	92	6830	94	5660	94	5300	95	4960	95	4640	97	108		

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS						
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS									
					V1 DIST		V1 DIST		V1 DIST									V1 DIST		V1 DIST		V1 DIST									
					KIAS FT		KIAS FT		KIAS FT									KIAS FT		KIAS FT		KIAS FT									
-35	87	3910	87	3010	87	2780	88	2590	89	2410	96	107	-35	87	3860	87	2980	87	2730	87	2490	87	2270	94	106						
-30	86	3910	86	3080	87	2880	88	2690	89	2500	96	107	-30	86	3870	86	2990	86	2730	86	2520	87	2350	94	106						
-25	84	3920	87	3190	87	2990	88	2790	89	2590	96	107	-25	85	3870	85	3000	86	2810	86	2620	87	2440	94	105						
-20	84	4010	87	3310	88	3090	88	2890	89	2690	96	106	-20	83	3880	85	3110	86	2910	87	2710	87	2530	94	105						
-15	84	4160	87	3430	88	3210	89	3000	90	2790	96	106	-15	83	3900	85	3220	86	3010	87	2810	87	2620	94	105						
-10	85	4320	88	3570	88	3340	89	3120	90	2910	96	106	-10	83	4050	85	3340	86	3130	87	2920	88	2720	94	105						
-5	85	4490	88	3710	89	3480	89	3250	90	3030	96	106	-5	83	4210	86	3470	87	3250	87	3030	88	2830	94	105						
0	86	4680	88	3880	89	3630	90	3390	91	3160	96	106	0	84	4380	86	3620	87	3390	88	3170	88	2950	94	105						
5	86	4890	89	4050	90	3800	90	3550	91	3310	96	106	5	84	4570	87	3790	88	3540	88	3310	89	3090	94	105						
10	87	5130	89	4250	90	3980	91	3720	91	3470	96	106	10	85	4790	87	3970	88	3720	89	3470	89	3240	94	105						
15	88	5410	90	4480	91	4200	91	3930	92	3670	96	106	15	86	5050	88	4180	89	3920	89	3660	90	3420	94	104						
20	88	5720	91	4740	91	4440	92	4150	92	3880	96	106	20	86	5330	89	4420	89	4140	90	3870	90	3610	94	104						
25	89	6060	91	5030	92	4710	92	4410	93	4110	96	106	25	87	5640	89	4680	90	4380	90	4100	91	3820	94	104						
29	90	6370	92	5270	92	4940	93	4620	93	4320	96	106	30	88	5990	90	4970	90	4650	91	4350	92	4060	94	104						
30	90	6440	92	5340	92	5000	93	4680	94	4370	96	106	33	88	6220	90	5150	91	4830	91	4510	92	4210	94	104						
33	90	6680	92	5540	93	5190	93	4850	94	4540	96	106	35	89	6370	91	5280	91	4940	92	4620	92	4320	94	104						
													36	89	6450	91	5340	91	5000	92	4680	92	4370	94	104						

Figure 4-20 (Sheet 19 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	87 3830	87 2960	87 2710	87 2480	87 2260	92 105	-35	87 3790	87 2940	87 2700	87 2470	87 2250	91 103
-30	86 3830	86 2960	86 2710	86 2480	86 2260	92 104	-30	86 3790	86 2940	86 2700	86 2470	86 2250	91 103
-25	85 3830	85 2970	85 2710	85 2480	85 2280	92 104	-25	85 3790	85 2940	85 2700	85 2460	85 2250	90 103
-20	84 3830	84 2970	84 2730	85 2540	85 2370	92 104	-20	84 3790	84 2940	84 2700	84 2460	84 2250	90 102
-15	83 3830	83 3020	84 2830	85 2640	86 2460	92 103	-15	83 3790	83 2940	83 2690	83 2470	84 2300	90 102
-10	81 3830	84 3130	84 2930	85 2730	86 2550	92 103	-10	82 3780	82 2940	82 2740	83 2560	84 2380	90 102
-5	81 3930	84 3250	85 3040	85 2840	86 2640	92 103	-5	80 3780	82 3040	83 2840	83 2650	84 2470	90 102
0	82 4090	84 3380	85 3160	86 2950	86 2750	92 103	0	80 3820	82 3160	83 2950	84 2760	84 2570	90 101
5	82 4270	85 3530	85 3300	86 3090	87 2880	92 103	5	80 3980	83 3290	83 3080	84 2870	85 2680	90 101
10	83 4470	85 3700	86 3460	87 3230	87 3020	92 103	10	81 4160	83 3440	84 3220	85 3010	85 2800	90 101
15	84 4710	86 3900	87 3650	87 3410	88 3180	92 103	15	82 4380	84 3620	84 3390	85 3170	86 2950	90 101
20	84 4960	87 4110	87 3850	88 3600	88 3350	92 103	20	82 4620	84 3820	85 3570	86 3340	86 3110	90 101
25	85 5250	87 4350	88 4070	88 3810	89 3550	92 103	25	83 4880	85 4040	86 3780	86 3530	87 3290	90 101
30	86 5570	88 4620	88 4320	89 4040	90 3770	92 103	30	84 5170	86 4280	86 4010	87 3740	87 3490	90 101
35	87 5910	89 4900	89 4590	90 4290	90 4010	92 103	35	85 5480	86 4540	87 4250	88 3970	88 3710	90 101
36	87 5990	89 4960	89 4640	90 4340	90 4060	92 103	36	85 5550	87 4600	87 4300	88 4020	88 3750	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	88 3770	88 2930	88 2690	88 2460	88 2240	89 102	-35	88 3750	88 2920	88 2680	88 2460	88 2240	90 103
-30	86 3760	86 2930	86 2680	86 2460	86 2240	89 102	-30	87 3740	87 2920	87 2680	87 2450	87 2240	89 102
-25	85 3760	85 2920	85 2680	85 2450	85 2240	89 101	-25	86 3730	86 2910	86 2670	86 2450	86 2230	87 101
-20	84 3760	84 2920	84 2680	84 2450	84 2230	89 101	-20	84 3730	84 2910	84 2670	84 2440	84 2230	87 100
-15	83 3750	83 2920	83 2670	83 2450	83 2230	89 101	-15	83 3720	83 2900	83 2660	83 2430	83 2220	87 99
-10	82 3740	82 2910	82 2670	82 2440	82 2220	89 101	-10	82 3710	82 2890	82 2650	82 2430	82 2210	87 99
-5	81 3730	81 2900	81 2660	81 2480	82 2300	88 100	-5	81 3690	81 2880	81 2640	81 2410	81 2200	87 99
0	79 3710	80 2950	81 2760	82 2570	82 2390	88 100	0	80 3670	80 2860	80 2620	80 2400	80 2230	87 99
5	78 3720	80 3070	81 2870	82 2680	83 2490	88 100	5	78 3640	78 2860	79 2670	80 2490	80 2320	86 98
10	79 3880	81 3200	82 2990	82 2790	83 2600	88 99	10	77 3610	79 2980	79 2790	80 2600	81 2420	86 98
15	79 4070	82 3360	82 3150	83 2940	84 2730	88 99	15	77 3780	79 3120	80 2920	81 2720	81 2530	86 97
20	80 4290	82 3540	83 3310	84 3090	84 2880	88 99	20	78 3970	80 3280	81 3070	81 2860	82 2660	86 97
25	81 4530	83 3740	84 3500	84 3270	85 3050	88 99	25	79 4190	81 3460	81 3240	82 3020	82 2820	86 97
30	82 4790	84 3960	84 3710	85 3460	85 3230	88 99	30	80 4430	81 3660	82 3430	83 3200	83 2980	86 97
35	83 5080	84 4200	85 3930	85 3670	86 3420	88 99	35	80 4690	82 3880	83 3630	83 3390	84 3160	86 97
36	83 5140	84 4250	85 3980	85 3720	86 3470	88 99	36	80 4750	82 3930	83 3670	83 3430	84 3200	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	88 3730	88 2920	88 2680	88 2460	88 2250	91 104	-35	89 3720	89 2920	89 2690	89 2470	89 2260	91 105
-30	87 3720	87 2910	87 2670	87 2450	87 2240	89 103	-30	87 3710	87 2910	87 2680	87 2460	87 2250	90 104
-25	86 3710	86 2900	86 2670	86 2440	86 2230	88 101	-25	86 3700	86 2900	86 2670	86 2450	86 2240	89 102
-20	85 3700	85 2890	85 2660	85 2430	85 2230	87 100	-20	85 3680	85 2890	85 2660	85 2440	85 2230	87 101
-15	84 3690	84 2880	84 2650	84 2430	84 2220	85 99	-15	84 3670	84 2880	84 2640	84 2420	84 2220	86 100
-10	82 3680	82 2870	82 2640	82 2420	82 2210	85 98	-10	83 3650	83 2860	83 2630	83 2410	83 2200	84 98
-5	81 3660	81 2860	81 2620	81 2400	81 2190	85 97	-5	81 3630	81 2850	81 2610	81 2390	81 2190	83 96
0	80 3630	80 2840	80 2600	80 2380	80 2170	85 97	0	80 3600	80 2820	80 2590	80 2370	80 2170	83 96
5	78 3600	78 2810	78 2580	78 2360	78 2150	85 97	5	79 3570	79 2790	79 2560	79 2340	79 2140	82 95
10	77 3560	77 2780	77 2590	78 2410	79 2240	84 96	10	77 3520	77 2750	77 2530	77 2310	77 2110	82 95
15	75 3520	77 2900	78 2710	78 2520	79 2350	84 96	15	75 3470	75 2710	76 2510	76 2330	77 2170	82 94
20	76 3680	78 3030	78 2840	79 2640	79 2460	84 95	20	73 3410	75 2810	76 2620	77 2440	77 2270	82 94
25	76 3880	78 3200	79 2990	80 2790	80 2600	84 95	25	74 3580	76 2950	76 2750	77 2560	78 2380	82 93
30	77 4100	79 3380	80 3160	80 2950	81 2740	84 95	30	75 3780	77 3110	77 2910	78 2710	78 2520	82 93
35	78 4330	80 3580	80 3340	81 3120	81 2900	84 95	35	76 3990	77 3290	78 3070	78 2860	79 2660	82 93
36	78 4380	80 3620	80 3380	81 3160	82 2940	84 95	36	76 4030	77 3320	78 3110	79 2900	79 2690	82 93

Figure 4-20 (Sheet 20 of 22)

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
10.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS									
	10 KTS				10 KTS		20 KTS		30 KTS			10 KTS				10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	90	4800	93	3970	94	3710	95	3470	96	3230	102	112	-35	89	4630	92	3830	93	3580	94	3340	95	3120	101	111
-30	91	4990	94	4130	95	3870	96	3610	97	3370	102	112	-30	90	4810	93	3980	93	3720	94	3480	95	3240	101	111
-25	91	5190	94	4300	95	4020	96	3760	97	3510	102	112	-25	90	5010	93	4140	94	3880	94	3620	95	3380	101	111
-20	91	5400	94	4470	95	4190	96	3920	97	3660	102	112	-20	90	5200	93	4310	94	4030	95	3770	95	3520	101	111
-15	92	5630	94	4660	95	4360	96	4080	97	3810	102	112	-15	91	5420	93	4490	94	4200	95	3930	96	3670	101	111
-10	92	5860	95	4860	96	4550	96	4250	97	3970	102	112	-10	91	5640	94	4670	95	4380	95	4090	96	3820	101	111
-5	92	6110	95	5060	96	4740	97	4440	97	4150	102	112	-5	91	5870	94	4870	95	4570	96	4270	96	3990	101	111
0	93	6380	95	5300	96	4960	97	4650	98	4340	102	112	0	92	6140	94	5090	95	4780	96	4470	97	4170	101	111
5	93	6680	96	5540	97	5200	97	4860	98	4550	102	112	5	92	6420	95	5330	96	5000	96	4680	97	4370	101	111
10	94	7050	96	5850	97	5480	98	5130	98	4790	102	112	10	93	6770	95	5620	96	5270	97	4930	97	4610	101	111
11	94	7130	96	5910	97	5540	98	5190	99	4850	102	112	13	93	7010	96	5810	96	5450	97	5100	98	4770	101	111
13	93	7380	97	6050	97	5670	98	5310	99	4960	102	112	15	93	7170	96	5950	97	5570	97	5220	98	4880	101	111
													17	94	7340	96	6090	97	5710	97	5340	98	4990	101	111

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2										
	10 KTS		V1 DIST		10 KTS		20 KTS					30 KTS		10 KTS		V1 DIST		10 KTS				20 KTS		30 KTS							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT						
-35	88	4360	90	3600	91	3360	92	3140	93	2930	99	110	-35	86	4090	88	3380	89	3160	90	2950	91	2740	98	108						
-30	88	4530	91	3740	92	3500	92	3270	93	3050	99	110	-30	86	4250	89	3510	90	3280	90	3060	91	2860	98	108						
-25	88	4700	91	3890	92	3640	93	3400	93	3170	99	110	-25	86	4410	89	3650	90	3410	91	3190	91	2970	98	108						
-20	89	4890	91	4050	92	3790	93	3540	94	3300	99	110	-20	87	4590	89	3790	90	3550	91	3320	92	3090	98	108						
-15	89	5080	92	4210	92	3940	93	3680	94	3440	99	110	-15	87	4760	90	3940	90	3690	91	3450	92	3220	98	108						
-10	89	5290	92	4380	93	4100	93	3840	94	3580	99	110	-10	87	4960	90	4110	91	3840	92	3590	92	3350	98	108						
-5	90	5510	92	4570	93	4280	94	4000	94	3740	99	110	-5	88	5160	90	4280	91	4000	92	3750	93	3500	97	108						
0	90	5750	93	4770	93	4470	94	4180	95	3910	99	110	0	88	5380	91	4460	92	4180	92	3910	93	3650	97	108						
5	90	6010	93	4990	94	4670	94	4370	95	4090	99	110	5	89	5620	91	4660	92	4370	93	4090	93	3820	97	108						
10	91	6330	94	5250	94	4920	95	4610	96	4310	99	109	10	89	5910	92	4910	92	4600	93	4310	94	4020	97	108						
15	92	6700	94	5560	95	5210	95	4880	96	4560	99	109	15	90	6250	92	5190	93	4860	94	4550	94	4250	97	108						
17	92	6850	94	5680	95	5330	96	4990	96	4660	99	109	20	91	6620	93	5490	94	5150	94	4820	95	4500	97	108						
20	92	7110	95	5890	95	5520	96	5170	97	4830	99	109	21	91	6700	93	5560	94	5210	94	4880	95	4560	97	108						
21	93	7190	95	5960	95	5590	96	5230	97	4890	99	109	25	91	7030	94	5840	94	5470	95	5120	95	4790	97	108						

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2																
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST			10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	VR V2																		
																						KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS
-35	85	3920	87	3180	87	2970	88	2770	89	2580	96	107	-35	85	3870	85	2990	86	2790	86	2610	87	2430	94	105														
-30	84	3990	87	3300	88	3080	88	2880	89	2680	96	106	-30	84	3880	85	3100	86	2900	87	2700	87	2510	94	105														
-25	84	4140	87	3420	88	3200	89	2990	89	2780	96	106	-25	83	3890	85	3210	86	3000	87	2800	87	2610	94	105														
-20	85	4300	87	3550	88	3320	89	3100	90	2890	96	106	-20	83	4030	85	3330	86	3110	87	2900	88	2710	94	105														
-15	85	4460	88	3690	89	3460	89	3230	90	3010	96	106	-15	83	4180	86	3450	87	3230	87	3020	88	2810	94	105														
-10	86	4640	88	3840	89	3600	90	3360	90	3140	96	106	-10	84	4340	86	3590	87	3360	88	3140	88	2930	94	105														
-5	86	4830	88	4000	89	3740	90	3500	91	3270	96	106	-5	84	4510	86	3740	87	3500	88	3270	89	3050	94	105														
0	86	5030	89	4170	90	3910	90	3650	91	3410	96	106	0	84	4700	87	3900	88	3650	88	3410	89	3180	94	105														
5	87	5250	89	4360	90	4080	91	3820	91	3570	96	106	5	85	4900	87	4070	88	3810	89	3560	89	3320	94	105														
10	87	5520	90	4580	90	4290	91	4020	92	3750	96	106	10	86	5150	88	4270	89	4000	89	3740	90	3490	94	104														
15	88	5830	90	4840	91	4530	92	4240	92	3960	96	106	15	86	5430	88	4510	89	4220	90	3950	90	3690	94	104														
20	89	6170	91	5120	92	4800	92	4490	93	4190	96	106	20	87	5740	89	4770	90	4460	90	4180	91	3900	94	104														
25	90	6550	92	5430	92	5090	93	4770	93	4450	96	106	25	88	6090	90	5050	90	4730	91	4430	91	4140	94	104														
29	90	6870	92	5700	93	5350	93	5000	94	4680	96	106	29	88	6390	90	5300	91	4970	91	4650	92	4340	94	104														
													30	88	6460	90	5360	91	5030	91	4710	92	4400	94	104														
													33	89	6700	91	5560	91	5210	92	4880	92	4560	94	104														

Figure 4-20 (Sheet 21 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
10.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2		TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2															
	10 KTS		WIND		10 KTS	20 KTS	30 KTS		10 KTS					WIND		10 KTS	20 KTS	30 KTS																					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS														
-35	85	3830	85	2960	85	2710	85	2480	85	2270	92 104		-35	85	3790	85	2940	85	2690	85	2460	85	2250	90 103															
-30	84	3830	84	2970	84	2720	85	2530	85	2360	92 104		-30	84	3790	84	2940	84	2700	84	2460	84	2250	90 102															
-25	83	3840	83	3010	84	2820	85	2630	86	2450	92 104		-25	83	3800	83	2950	83	2700	83	2470	84	2290	90 102															
-20	82	3840	83	3120	84	2920	85	2720	86	2530	92 103		-20	82	3800	82	2950	82	2730	83	2550	84	2370	90 102															
-15	81	3910	84	3230	84	3020	85	2820	86	2630	92 103		-15	81	3800	82	3030	82	2830	83	2640	84	2460	90 102															
-10	81	4060	84	3360	85	3140	85	2930	86	2730	92 103		-10	80	3800	82	3140	83	2930	83	2740	84	2550	90 101															
-5	82	4210	84	3490	85	3260	86	3050	87	2840	92 103		-5	80	3930	82	3250	83	3040	84	2840	84	2640	90 101															
0	82	4390	85	3630	86	3400	86	3180	87	2960	92 103		0	80	4090	83	3380	83	3160	84	2950	85	2750	90 101															
5	83	4570	85	3790	86	3550	87	3320	87	3090	92 103		5	81	4260	83	3530	84	3300	84	3080	85	2870	90 101															
10	84	4800	86	3980	86	3730	87	3480	88	3250	92 103		10	81	4470	84	3700	84	3460	85	3240	86	3020	90 101															
15	84	5060	86	4190	87	3930	88	3670	88	3430	92 103		15	82	4700	84	3900	85	3650	86	3410	86	3180	90 101															
20	85	5340	87	4430	88	4150	88	3880	89	3620	92 103		20	83	4960	85	4110	86	3850	86	3600	87	3360	90 101															
25	86	5650	88	4690	88	4390	89	4110	89	3840	92 103		25	84	5250	86	4350	86	4080	87	3810	87	3560	90 101															
30	86	6000	88	4980	89	4660	89	4370	90	4080	92 103		30	84	5560	86	4620	87	4320	87	4040	88	3770	90 101															
33	87	6220	89	5160	89	4840	90	4520	90	4230	92 103		34	85	5830	87	4830	87	4530	88	4240	88	3960	90 101															
34	87	6290	89	5220	89	4900	90	4580	90	4280	92 103																												

WEIGHT = 12500 LBS							VENR = 160 KIAS							WEIGHT = 12000 LBS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				VR V2	KIAS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				VR V2	KIAS						
	10 KTS		WIND		10 KTS	20 KTS	30 KTS	10 KTS					WIND		10 KTS	20 KTS	30 KTS										
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT			
-35	85	3760	85	2920	85	2680	85	2450	85	2240	89	101	-35	86	3730	86	2910	86	2670	86	2440	86	2230	87	101		
-30	84	3760	84	2920	84	2680	84	2450	84	2240	89	101	-30	85	3730	85	2910	85	2670	85	2440	85	2230	87	100		
-25	83	3760	83	2920	83	2680	83	2450	83	2240	89	101	-25	83	3730	83	2910	83	2670	83	2440	83	2230	87	100		
-20	82	3760	82	2920	82	2680	82	2450	82	2230	89	101	-20	82	3720	82	2900	82	2660	82	2440	82	2220	87	99		
-15	81	3760	81	2920	81	2680	81	2470	82	2290	88	100	-15	81	3720	81	2900	81	2660	81	2430	81	2220	87	99		
-10	80	3750	80	2930	81	2740	81	2560	82	2380	88	100	-10	80	3710	80	2890	80	2650	80	2430	80	2210	87	99		
-5	79	3740	80	3040	81	2840	82	2650	82	2470	88	100	-5	79	3700	79	2880	79	2650	80	2470	80	2300	87	98		
0	78	3810	81	3150	81	2950	82	2750	83	2560	88	99	0	78	3680	78	2940	79	2750	80	2560	80	2390	86	98		
5	79	3960	81	3280	82	3070	82	2860	83	2670	88	99	5	77	3690	79	3050	79	2850	80	2660	81	2480	86	98		
10	79	4150	81	3430	82	3210	83	3000	83	2800	88	99	10	77	3850	79	3190	80	2980	80	2780	81	2590	86	97		
15	80	4370	82	3610	83	3380	83	3160	84	2950	88	99	15	78	4050	80	3350	81	3130	81	2920	82	2720	86	97		
20	81	4600	83	3810	83	3570	84	3330	85	3110	88	99	20	79	4260	81	3530	81	3300	82	3080	82	2870	86	97		
25	82	4860	83	4030	84	3770	85	3530	85	3290	88	99	25	79	4500	81	3720	82	3490	82	3260	83	3030	86	97		
30	82	5150	84	4270	85	4000	85	3740	86	3490	88	99	30	80	4760	82	3940	82	3690	83	3450	83	3210	86	97		
34	83	5390	85	4470	85	4190	86	3910	86	3650	88	99	34	81	4980	82	4130	83	3860	83	3610	84	3370	86	97		

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR VZ		TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR VZ															
	10 KTS		WIND		10 KTS		20 KTS		30 KTS					10 KTS		WIND		10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS														
-35	86	3710	86	2900	86	2660	86	2440	86	2230	88	102	-35	86	3700	86	2900	86	2670	86	2450	86	2240	89	103														
-30	85	3700	85	2900	85	2660	85	2440	85	2230	87	100	-30	85	3690	85	2890	85	2660	85	2440	85	2230	87	101														
-25	84	3700	84	2890	84	2660	84	2430	84	2220	85	99	-25	84	3680	84	2880	84	2650	84	2430	84	2220	86	100														
-20	83	3690	83	2890	83	2650	83	2430	83	2220	85	98	-20	83	3670	83	2880	83	2640	83	2420	83	2220	85	98														
-15	81	3680	81	2880	81	2640	81	2420	81	2210	85	98	-15	82	3660	82	2870	82	2630	82	2410	82	2210	83	97														
-10	80	3670	80	2870	80	2630	80	2410	80	2200	85	97	-10	81	3640	81	2850	81	2620	81	2400	81	2190	83	96														
-5	79	3660	79	2860	79	2620	79	2400	79	2190	85	97	-5	79	3630	79	2840	79	2610	79	2390	79	2180	83	96														
0	78	3640	78	2840	78	2610	78	2390	78	2210	85	97	0	78	3600	78	2820	78	2590	78	2370	78	2160	82	95														
5	76	3620	77	2830	77	2600	78	2470	79	2300	84	96	5	77	3580	77	2800	77	2570	77	2350	77	2150	82	95														
10	75	3580	77	2960	78	2770	78	2580	79	2400	84	96	10	75	3530	75	2760	75	2560	76	2380	77	2220	82	94														
15	75	3750	77	3090	78	2890	79	2700	79	2510	84	95	15	73	3480	75	2860	76	2680	76	2490	77	2320	82	94														
20	76	3940	78	3250	79	3040	79	2840	80	2650	84	95	20	74	3630	76	3000	76	2800	77	2610	78	2430	82	94														
25	77	4160	79	3440	79	3210	80	3000	81	2790	84	95	25	74	3830	76	3160	77	2960	78	2760	78	2560	82	93														
30	78	4390	80	3630	80	3400	81	3170	81	2960	84	95	30	75	4040	77	3340	78	3120	78	2910	79	2710	82	93														
34	78	4590	80	3800	81	3560	81	3320	82	3090	84	95	34	76	4220	78	3490	78	3260	79	3040	79	2830	82	93														

**SINGLE-ENGINE TAKEOFF FLIGHT PATH - FLAPS 7 °
FIRST AND SECOND SEGMENTS - REFERENCE ZERO TO 1500 FEET
(FIGURE 4-21)**

Knowing weight, altitude, temperature, wind, obstacle height above runway surface and the obstacle distance from "reference zero", determine the available climb gradient determined from Figure 4-31. Using this climb gradient, the required horizontal distance can be determined from Figure 4-21. If this required horizontal distance is less than the available horizontal distance to the obstacle, the takeoff weight determined by other limitations is satisfactory; otherwise, the weight must be reduced to correspond with the required horizontal distance.

EXAMPLE:

Ambient Temperature at Airport = 10 °C
Pressure Altitude at Airport = 2500 FEET
Pressure Altitude at Airport plus 1500 feet = 4000 FEET
Gross Weight at Brake Release = 14,500 POUNDS
Wind = 20 KNOTS (HEADWIND)
Flaps = 7°
Anti-Ice Systems = OFF
A. Obstacle Height = 200 feet above runway surface
B. Obstacle Horizontal Distance from Reference
Zero = 4000 FEET

From Figure 4-31, the available climb gradient under the specified conditions is 9.0 percent.

From Figure 4-21, for 9.0 percent gradient, the required horizontal distance is 2070 feet.

Since the available distance is greater than the required distance, the obstacle will be cleared.

SINGLE ENGINE TAKEOFF FLIGHT PATH TO 1500 FEET - FLAPS 7°**FIRST AND SECOND SEGMENT
REFERENCE ZERO TO 1500 FEET****CONDITIONS:**

Flaps - 7°
 Landing Gear - DOWN/UP
 Speed Brakes - RETRACT
 Airspeed - V_2
 Inoperative Engine - WINDMILLING
 Operative Engine - TAKEOFF THRUST

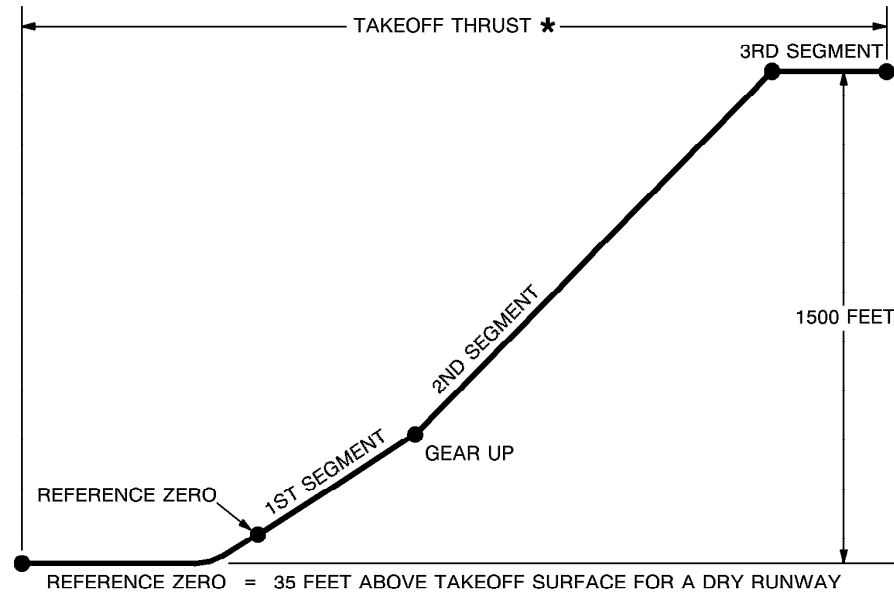
SECOND SEGMENT GRADIENT 1500 FEET ABOVE FIELD ELEVATION - PERCENT													
HEIGHT ABOVE RUNWAY FT	14	13	12	11	10	9	8	7	6	5	4	3	2
	HORIZONTAL DISTANCE FROM REFERENCE ZERO - FEET												
50	120	130	150	160	180	200	230	270	330	420	580	910	1650
100	530	580	630	690	770	870	1000	1180	1420	1690	2100	2780	4150
150	940	1020	1110	1230	1370	1510	1700	1930	2250	2690	3350	4450	6650
200	1350	1450	1560	1700	1870	2070	2320	2650	3080	3690	4600	6120	9150
250	1700	1830	1980	2160	2370	2630	2950	3360	3920	4690	5850	7780	11650
300	2060	2220	2400	2610	2870	3180	3570	4080	4750	5690	7100	9450	14150
350	2420	2600	2810	3070	3370	3740	4200	4790	5580	6690	8350	11120	16650
400	2780	2990	3230	3520	3870	4290	4820	5510	6420	7690	9600	12780	19150
450	3130	3370	3650	3970	4370	4850	5450	6220	7250	8690	10850	14450	21650
500	3490	3750	4060	4430	4870	5400	6070	6930	8080	9690	12100	16120	24150
550	3850	4140	4480	4880	5370	5960	6700	7650	8920	10690	13350	17780	26650
600	4200	4520	4900	5340	5870	6510	7320	8360	9750	11690	14600	19450	29150
650	4560	4910	5310	5790	6370	7070	7950	9080	10580	12690	15850	21120	31650
700	4920	5290	5730	6250	6870	7630	8570	9790	11420	13690	17100	22780	34150
750	5280	5680	6150	6700	7370	8180	9200	10510	12250	14690	18350	24450	36650
800	5630	6060	6560	7160	7870	8740	9820	11220	13080	15690	19600	26120	39150
850	5990	6450	6980	7610	8370	9290	10450	11930	13920	16690	20850	27780	41650
900	6350	6830	7400	8070	8870	9850	11070	12650	14750	17690	22100	29450	44150
950	6700	7220	7810	8520	9370	10400	11700	13360	15580	18690	23350	31120	46650
1000	7060	7600	8230	8970	9870	10960	12320	14080	16420	19690	24600	32780	49150
1050	7420	7990	8650	9430	10370	11510	12950	14790	17250	20690	25850	34450	51650
1100	7780	8370	9060	9880	10870	12070	13570	15510	18080	21690	27100	36120	54150
1150	8130	8750	9480	10340	11370	12630	14200	16220	18920	22690	28350	37780	56650
1200	8490	9140	9900	10790	11870	13180	14820	16930	19750	23690	29600	39450	59150
1250	8850	9520	10310	11250	12370	13740	15450	17650	20580	24690	30850	41120	61650
1300	9200	9910	10730	11700	12870	14290	16070	18360	21420	25690	32100	42780	64150
1350	9560	10290	11150	12160	13370	14850	16700	19080	22250	26690	33350	44450	66650
1400	9920	10680	11560	12610	13870	15400	17320	19790	23080	27690	34600	46120	69150
1450	10280	11060	11980	13070	14370	15960	17950	20510	23920	28690	35850	47780	71650
1500	10630	11450	12400	13520	14870	16510	18570	21220	24750	29690	37100	49450	74150



Figure 4-21

SINGLE-ENGINE TAKEOFF FLIGHT PATH DISTANCES - FLAPS 7°

The data presented in Figure 4-23 (anti-ice off) and Figure 4-24 (anti-ice on) is included for the purpose of determining the horizontal distance in the climb from reference zero to 1500 feet and acceleration to V_{ENR} .



* TAKEOFF THRUST IS LIMITED TO TEN MINUTES MAXIMUM AND THEREAFTER TO MAXIMUM CONTINUOUS THRUST.

CONDITIONS

SINGLE-ENGINE FLIGHT PATH CONDITIONS:			
	FIRST SEGMENT	SECOND SEGMENT	THIRD SEGMENT
LANDING GEAR	DOWN TRANSITION TO UP	UP	UP
WING FLAP DEGREES	7	7	7 TRANSITIONING TO 0
SPEED BRAKES	RETRACT	RETRACT	RETRACT
INOPERATIVE ENGINE	WINDMILLING	WINDMILLING	WINDMILLING
OPERATIVE ENGINE	T.O. THRUST	T.O. THRUST	T.O. THRUST
AIRSPEED	V_2	V_2	V_2 TRANSITIONING TO V_{ENR}

EXAMPLE:

Flaps = 7°
 Ambient Temperature at Airport = 15°C
 Pressure Altitude at Airport = 4000 FEET
 Gross Weight at Brake Release = 12,500 POUNDS
 Wind = 20 KNOTS (HEADWIND)
 Anti-Ice Systems = OFF
 Horizontal Distance from Figure 4-23
 Reference Zero to End of First Segment = 945 FEET
 Reference Zero to End of Second Segment = 13,390 FEET
 Reference Zero to End of Third Segment = 20,279 FEET

Figure 4-22

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
SEA LEVEL

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	5	1197	25123	34164	1058	21879	29256	1012	20821	27692	965	19772	26161	919	18735	24665
	10	1207	25146	34329	1068	21924	29425	1021	20872	27862	975	19831	26333	928	18800	24838
	15	1216	25168	34493	1077	21969	29595	1031	20924	28033	984	19889	26505	938	18865	25011
	20	1225	26393	36502	1086	23046	31308	1040	21955	29655	993	20874	28037	947	19804	26457
	25	1235	27757	38765	1095	24244	33236	1049	23099	31477	1003	21967	29759	956	20846	28079
	30	1244	30747	43115	1104	26838	36927	1058	25566	34961	1011	24309	33041	965	23068	31169
	35	1252	35025	49194	1113	30528	42067	1067	29070	39807	1020	27631	37604	974	26212	35456
	40	1261	40812	57335	1122	35491	48917	1075	33772	46255	1029	32081	43665	983	30415	41142
	45	1270	49040	68760	1130	42489	58464	1084	40387	55225	1038	38323	52077	991	36296	49019
	50	1278	61232	85472	1139	52745	72302	1093	50044	68183	1046	47404	64194	1000	44823	60330
1 5 0 0	5	1285	75950	105385	1146	64943	88580	1099	61477	83366	1053	58106	78335	1007	54827	73481
	10	1188	23986	32833	1049	20880	28098	1002	19864	26587	956	18860	25111	910	17865	23667
	15	1197	24005	32990	1058	20921	28260	1012	19913	26751	965	18914	25275	919	17926	23833
	20	1207	24026	33149	1068	20962	28423	1021	19960	26914	975	18969	25441	928	17986	23998
	25	1216	25161	35036	1077	21962	30033	1030	20917	28439	984	19883	26881	937	18858	25357
	30	1225	26421	37156	1086	23070	31840	1039	21976	30147	993	20894	28493	947	19824	26878
	35	1234	29174	41203	1095	25460	35274	1048	24249	33388	1002	23054	31549	955	21871	29752
	40	1243	33082	46816	1103	28833	40020	1057	27454	37864	1011	26093	35762	964	24748	33712
	45	1251	38310	54254	1112	33325	46285	1066	31712	43763	1019	30123	41307	973	28557	38915
	50	1260	45633	64546	1121	39568	54899	1074	37616	51858	1028	35699	48903	981	33813	46029
1 4 0 0	5	1268	56247	79299	1129	48528	67145	1083	46064	63336	1036	43650	59643	990	41287	56063
	10	1275	68695	96418	1136	58903	81199	1089	55804	76461	1043	52784	71884	997	49838	67459
	15	1172	22225	30755	1033	19329	26288	987	18382	24863	940	17442	23468	894	16513	22107
	20	1182	22241	30903	1042	19364	26439	996	18424	25016	950	17492	23623	903	16567	22261
	25	1191	22256	31051	1052	19401	26592	1005	18465	25168	959	17540	23777	912	16622	22416
	30	1200	23260	32757	1061	20286	28048	1014	19313	26546	968	18350	25079	921	17395	23644
	35	1209	24368	34666	1070	21262	29674	1023	20246	28083	977	19242	26531	930	18246	25012
	40	1217	26774	38266	1078	23353	32730	1032	22237	30969	985	21132	29248	939	20040	27570
	45	1226	30151	43203	1087	26274	36907	1040	25011	34907	994	23765	32957	948	22534	31056
	50	1235	34597	49646	1095	30099	42336	1049	28641	40022	1002	27202	37765	956	25783	35568
1 3 0 0	5	1243	40683	58373	1104	35306	49657	1057	33570	46905	1011	31861	44227	964	30178	41621
	10	1251	49231	70524	1112	42557	59777	1066	40416	56399	1019	38315	53119	973	36253	49936
	15	1258	58854	84108	1119	50638	70991	1072	48020	66889	1026	45461	62917	979	42956	59070
	20	1160	20561	28719	1021	17872	24529	974	16990	23191	928	16118	21885	882	15252	20606
	25	1169	20574	28859	1030	17904	24672	984	17029	23336	937	16161	22029	891	15302	20752
	30	1178	20588	29000	1039	17936	24816	992	17066	23479	946	16205	22174	900	15351	20897
	35	1186	21489	30574	1047	18729	26155	1000	17825	24746	954	16930	23369	907	16042	22022
	40	1194	22482	32332	1054	19601	27647	1008	18659	26156	962	17726	24698	915	16800	23273
	45	1201	24617	35601	1062	21456	30417	1015	20422	28767	969	19400	27157	922	18387	25583
	50	1209	27551	39966	1070	23996	34111	1024	22838	32252	977	21691	30436	931	20558	28665
1 2 0 0	5	1218	31358	45585	1078	27278	38851	1032	25952	36715	986	24643	34634	939	23349	32605
	10	1226	36470	53062	1087	31662	45130	1040	30105	42621	994	28571	40179	947	27058	37802
	15	1234	43457	63215	1095	37612	53606	1048	35729	50578	1002	33879	47637	956	32059	44779
	20	1241	51063	74224	1101	44035	62729	1055	41785	59124	1009	39579	55627	962	37414	52235
	25	1148	19038	26836	1009	16537	22903	962	15716	21647	916	14903	20419	869	14095	19218
	30	1157	19048	26966	1018	16565	23036	971	15750	21781	925	14942	20554	878	14140	19353
	35	1166	19059	27098	1026	16592	23168	980	15783	21915	934	14981	20689	887	14185	19489
	40	1173	19855	28519	1034	17295	24379	988	16456	23059	941	15623	21767	895	14798	20506
	45	1181	20730	30102	1042	18065	25723	995	17191	24327	949	16326	22964	902	15467	21631
	50	1185	22646	33119	1046	19722	28267	999	18765	26723	953	17818	25215	907	16880	23743
1 1 0 0	5	1192	25228	37044	1053	21957	31584	1006	20888	29848	960	19832	28155	914	18786	26502
	10	1200	28508	41976	1061	24788	35744	1015	23578	33769	968	22380	31840	922	21197	29961
	15	1208	32838	48434	1069	28509	41173	1023	27105	38875	976	25717	36635	930	24349	34455
	20	1217	38622	57021	1077	33449	48353	1031	31778	45619	984	30131	42957	938	28511	40371
	25	1223	44740	66094	1084	38640	55895	1037	36678	52688	991	34750	49573	944	32855	46548
	30	1136	17641	25094	996	15310	21396	950	14545	20216	903	13785	19061	857	13032	17933
	35	1144	17647	25213	1005	15334	21519	959	14575	20341	912	13821	19187	866	13073	18059
	40	1153	17656	25336	1014	15359	21644	967	14604	20465	921	13856	19312	875	13113	18185
	45	1161	18363	26625	1021	15982	22739	975	15202	21501	929	14427	20290	882	13657	19105
	50	1168	19135	28053	1029	16663	23953	982	15852	22646	936	15048	21369	890	14251	20121



Figure 4-23 (Sheet 1 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
SEA LEVEL

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	5	1123	16352	23472	984	14179	19995	937	13464	18884	891	12756	17799	844	12051	16737
	10	1132	16358	23585	992	14200	20110	946	13491	19000	900	12788	17917	853	12088	16855
	15	1140	16363	23698	1001	14221	20225	955	13518	19117	908	12818	18032	862	12125	16973
	20	1148	16992	24869	1008	14776	21220	962	14049	20057	916	13327	18919	869	12609	17806
	25	1155	17676	26161	1016	15381	22319	969	14626	21093	923	13879	19896	876	13136	18726
	30	1159	19161	28583	1020	16666	24358	973	15848	23013	927	15037	21700	880	14231	20415
	35	1161	21186	31812	1022	18412	27072	976	17504	25564	929	16603	24091	883	15712	22656
	40	1165	23725	35823	1026	20597	30437	979	19574	28726	933	18562	27058	886	17560	25430
	45	1173	26899	40742	1033	23330	34573	987	22167	32617	941	21018	30712	894	19880	28853
	50	1180	30978	47059	1041	26829	39865	995	25482	37590	948	24151	35374	902	22837	33216
1 3 5 0 0	54	1187	35104	53470	1047	30350	45210	1001	28812	42605	954	27294	40069	908	25799	37605
	5	1110	15162	21959	971	13132	18686	925	12465	17642	878	11802	16620	832	11144	15622
	10	1119	15166	22065	980	13151	18794	933	12488	17750	887	11831	16730	840	11176	15730
	15	1127	15169	22170	988	13170	18902	942	12512	17859	895	11858	16838	849	11210	15841
	20	1135	15730	23236	995	13665	19807	949	12986	18713	903	12313	17645	856	11643	16600
	25	1142	16337	24408	1003	14202	20803	956	13500	19653	910	12803	18530	863	12111	17432
	30	1145	17649	26586	1006	15338	22636	960	14580	21379	913	13826	20149	867	13080	18950
	35	1148	19427	29471	1008	16870	25057	962	16033	23654	916	15202	22284	869	14377	20945
	40	1150	21647	33053	1011	18779	28059	964	17840	26472	918	16911	24924	871	15989	23414
	45	1154	24438	37499	1015	21177	31784	968	20112	29971	922	19058	28203	876	18016	26481
1 2 5 0 0	50	1162	27905	42980	1023	24155	36376	976	22933	34284	930	21727	32249	883	20533	30264
	54	1168	31346	48450	1029	27098	40941	982	25718	38568	936	24357	36260	889	23013	34013
	5	1104	14024	20439	964	12142	17390	918	11524	16419	872	10909	15467	825	10297	14536
	10	1112	14027	20540	973	12160	17493	926	11545	16520	880	10935	15570	833	10327	14639
	15	1120	14031	20642	981	12177	17596	934	11566	16623	888	10960	15672	842	10358	14743
	20	1122	14558	21697	983	12634	18478	936	12001	17451	890	11372	16448	844	10748	15467
	25	1128	15102	22774	989	13114	19390	943	12461	18313	896	11810	17257	850	11165	16228
	30	1132	16267	24741	992	14122	21044	946	13417	19867	900	12718	18717	853	12023	17594
	35	1134	17830	27323	995	15470	23210	948	14695	21901	902	13927	20624	855	13164	19377
	40	1136	19765	30503	996	17133	25872	950	16271	24400	904	15417	22965	857	14569	21564
1 2 5 0 0	45	1137	22210	34499	998	19229	29209	952	18255	27531	905	17289	25894	859	16333	24299
	50	1143	25208	39356	1004	21801	33270	957	20689	31341	911	19590	29464	864	18501	27633
	54	1149	28103	44063	1009	24280	37198	963	23036	35028	917	21808	32916	870	20592	30858
	5	1113	12917	18809	973	11204	16042	927	10640	15159	880	10079	14294	834	9521	13448
	10	1121	12919	18899	982	11220	16135	935	10659	15250	889	10103	14387	842	9548	13540
	15	1129	12922	18991	990	11235	16226	943	10678	15342	897	10125	14478	851	9576	13634
	20	1131	13379	19924	992	11633	17009	945	11057	16077	899	10485	15167	853	9916	14276
	25	1133	13876	20953	994	12064	17869	947	11467	16885	901	10874	15923	854	10284	14983
	30	1118	14995	23025	979	13003	19564	932	12348	18462	886	11697	17385	839	11050	16333
	35	1120	16374	25343	981	14192	21507	934	13475	20286	888	12764	19095	841	12057	17931
1 5 0 0	40	1121	18065	28174	982	15646	23875	936	14853	22509	889	14065	21175	843	13284	19874
	45	1123	20181	31698	984	17460	26816	937	16568	25266	891	15685	23755	844	14809	22281
	50	1124	22808	36080	985	19704	30462	938	18689	28681	892	17686	26947	846	16692	25257
	54	1129	25273	40184	990	21816	33885	943	20688	31891	897	19573	29950	851	18471	28062
	5	1122	11925	17331	983	10363	14818	936	9847	14015	890	9334	13228	844	8825	12459
	10	1130	11927	17412	991	10376	14900	945	9864	14097	898	9355	13311	852	8849	12542
	15	1139	11930	17494	1000	10390	14983	953	9881	14179	907	9376	13394	860	8873	12624
	20	1141	12329	18324	1001	10738	15679	955	10213	14833	909	9692	14007	862	9172	13198
	25	1142	12760	19234	1003	11114	16442	957	10572	15552	910	10031	14679	864	9495	13827
	30	1126	13720	21070	987	11919	17943	940	11325	16946	894	10736	15972	847	10149	15020
1 1 0 0	35	1106	15042	23512	966	13021	19931	920	12357	18792	873	11696	17679	827	11041	16593
	40	1107	16526	26042	968	14297	22045	921	13564	20774	875	12838	19535	828	12116	18324
	45	1108	18362	29160	969	15871	24645	922	15053	23211	876	14243	21813	829	13439	20450
	50	1109	20614	32995	970	17796	27835	923	16873	26198	877	15959	24604	830	15052	23049
	54	1110	22768	36696	971	19631	30903	924	18606	29069	878	17592	27284	831	16587	25544
	5	1132	11030	15984	993	9601	13700	946	9129	12969	900	8660	12254	853	8192	11553
	10	1140	11032	16056	1001	9613	13773	955	9145	13043	908	8678	12327	862	8215	11628
	15	1149	11034	16129	1010	9626	13847	963	9160	13116	917	8698	12402	870	8237	11702
	20	1151	11386	16870	1011	9932	14468	965	9453	13701	919	8977	12951	872	8501	12215
	25	1152	11763	17680	1013	10263	15150	967	9768	14341	920	9275	13550	874	8786	12777
1 1 0 0	30	1135	12586	19299	996	10953	16473	950	10415	15572	903	9879	14690	857	9347	13829
	35	1113	13714	21457	973	11891	18226	927	11292	17199	881	10696	16195	834	10103	15214
	40	1092	15124	24082	952	13066	20361	906	12390	19179	860	11718	18025	813	11050	16899
	45	1092	16722	26850	953	14435	22666	907	13685	21339	860	12939	20043	814	12200	18780
	50	1093	18658	30219	954	16090	25466	907	15248	23958	861	14414	22490	815	13586	21059
	54	1094	20488	33436	955	17650	28132	908	16721	26452	862	15801	24816	815	14889	23223



Figure 4-23 (Sheet 2 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
1000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	5	1217	24555	33737	1077	21441	28954	1031	20424	27428	985	19417	25936	938	18419	24477
	10	1226	24615	34045	1087	21518	29240	1041	20507	27708	994	19504	26209	948	18512	24744
	15	1236	25399	35360	1097	22218	30377	1050	21179	28788	1004	20150	27234	957	19131	25716
	20	1245	27504	38546	1106	24056	33091	1059	22931	31354	1013	21819	29657	967	20719	28000
	25	1254	30140	42502	1115	26350	36454	1069	25116	34531	1022	23896	32653	976	22691	30821
	30	1263	34165	48274	1124	29831	41344	1078	28425	39147	1031	27036	37002	985	25666	34912
	35	1272	39437	55784	1133	34367	47680	1087	32728	45117	1040	31112	42619	994	29521	40187
	40	1281	46716	66006	1142	40584	56255	1096	38612	53182	1049	36673	50193	1003	34769	47289
	45	1290	57306	80664	1151	49542	68453	1104	47062	64624	1058	44636	60912	1012	42259	57312
	50	1299	73597	102894	1160	63121	86720	1113	59815	81694	1067	56596	76839	1020	53460	72150
1 5 0 0	5	1302	82952	115473	1163	70811	96936	1117	67006	91204	1070	63311	85680	1024	59724	80358
	10	1207	23458	32445	1068	20474	27826	1022	19499	26354	975	18532	24912	929	17575	23503
	15	1217	23515	32741	1078	20547	28102	1031	19576	26621	985	18614	25173	938	17661	23758
	20	1226	24242	33979	1087	21196	29171	1040	20200	27637	994	19215	26140	948	18238	24674
	25	1235	26189	36360	1096	22898	31712	1050	21824	30040	1003	20760	28406	957	19708	26811
	30	1245	28616	40645	1105	25011	34843	1059	23837	32999	1012	22674	31196	966	21526	29438
	35	1254	32297	45980	1114	28198	39366	1068	26866	37267	1021	25550	35218	975	24251	33221
	40	1262	37068	52855	1123	32309	45171	1077	30768	42738	1030	29248	40367	984	27750	38057
	45	1271	43568	62096	1132	37873	52933	1086	36037	50041	1039	34231	47228	993	32455	44492
	50	1280	52846	75115	1141	45745	63790	1094	43471	60232	1048	41242	56781	1001	39055	53430
1 5 0 0	5	1289	66722	94353	1149	57370	79660	1103	54406	75079	1057	51513	70649	1010	48688	66363
	10	1292	74480	104975	1153	63794	88335	1106	60424	83168	1060	57146	78181	1014	53954	73367
	15	1192	21743	30394	1053	18962	26039	1006	18051	24649	960	17149	23290	914	16255	21962
	20	1201	21794	30673	1062	19027	26297	1016	18122	24902	969	17224	23536	923	16334	22201
	25	1210	22451	31826	1071	19613	27290	1024	18684	25843	978	17764	24429	931	16851	23045
	30	1219	24166	34503	1080	21114	29571	1033	20116	28000	987	19128	26465	941	18150	24965
	35	1228	26287	37786	1089	22963	32362	1042	21877	30635	996	20804	28950	950	19742	27305
	40	1237	29473	42487	1098	25725	36349	1051	24504	34398	1005	23298	32496	958	22105	30639
	45	1246	33541	48461	1106	29236	41396	1060	27839	39157	1014	26461	36975	967	25099	34847
	50	1254	38970	56337	1115	33898	48024	1069	32258	45396	1022	30642	42838	976	29051	40348
1 5 0 0	5	1263	46508	67153	1124	40322	57069	1077	38332	53894	1031	36378	50809	984	34457	47812
	10	1271	57343	82563	1132	49461	69845	1086	46947	65864	1039	44486	62005	993	42077	58268
	15	1275	63184	90791	1135	54342	76611	1089	51534	72187	1043	48791	67906	996	46110	63763
	20	1180	20133	28406	1041	17548	24318	994	16700	23013	948	15860	21737	901	15027	20489
	25	1189	20178	28665	1050	17607	24558	1003	16763	23246	957	15928	21965	911	15099	20711
	30	1197	20760	29713	1058	18126	25459	1011	17263	24102	965	16407	22775	919	15559	21479
	35	1203	22310	32206	1064	19477	27574	1018	18550	26098	971	17631	24655	925	16721	23246
	40	1211	24188	35184	1072	21114	30101	1026	20109	28483	979	19113	26902	933	18128	25360
	45	1220	26960	39348	1081	23520	33633	1034	22397	31816	988	21287	30043	941	20188	28312
	50	1228	30451	44573	1089	26538	38050	1043	25266	35981	996	24007	33962	950	22765	31995
1 4 0 0	5	1237	35031	51351	1098	30479	43759	1051	29003	41356	1005	27547	39016	958	26111	36736
	10	1245	41238	60453	1106	35787	51388	1060	34028	48528	1013	32296	45746	967	30593	43042
	15	1254	49876	73044	1115	43112	61863	1068	40942	58351	1022	38815	54945	975	36726	51638
	20	1257	54396	79585	1118	46917	67271	1071	44526	63413	1025	42185	59674	979	39891	56051
	25	1167	18658	26569	1028	16251	22726	982	15462	21501	935	14677	20299	889	13900	19127
	30	1177	18698	26809	1037	16303	22948	991	15518	21717	944	14738	20511	898	13965	19333
	35	1184	19213	27758	1045	16764	23765	999	15962	22493	952	15164	21246	906	14374	20029
	40	1191	20580	29999	1051	17956	25665	1005	17097	24284	959	16245	22934	912	15400	21615
	45	1196	22255	32726	1057	19413	27973	1011	18483	26459	964	17561	24981	918	16648	23537
	50	1203	24711	36510	1063	21540	31172	1017	20505	29475	970	19480	27819	924	18465	26202
1 4 0 0	5	1211	27726	41108	1072	24151	35060	1025	22986	33141	979	21834	31268	933	20695	29442
	10	1219	31618	46984	1080	27507	40014	1034	26171	37806	987	24851	35654	941	23548	33557
	15	1228	36790	54731	1088	31940	46515	1042	30371	43919	996	28824	41393	949	27299	38935
	20	1236	43789	65178	1097	37901	55230	1050	36004	52098	1004	34141	49057	957	32307	46101
	25	1239	47364	70487	1100	40927	59636	1054	38860	56227	1007	36830	52918	961	34837	49707
	30	1155	17303	24865	1016	15058	21250	969	14320	20095	923	13589	18967	876	12862	17862
	35	1164	17337	25088	1025	15105	21456	978	14371	20296	932	13644	19163	885	12921	18054
	40	1172	17795	25950	1032	15514	22198	986	14766	21001	940	14023	19831	893	13285	18686
	45	1178	19004	27969	1038	16569	23908	992	15771	22615	946	14980	21351	899	14193	20113
	50	1183	20475	30411	1044	17850	25974	997	16989	24560	951	16137	23181	905	15292	21834
1 4 0 0	5	1186	22665	33880	1047	19741	28896	1000	18785	27311	954	17838	25764	908	16900	24254
	10	1193	25301	37991	1054	22023	32368	1008	20953	30582	961	19893	28839	915	18845	27140
	15	1201	28633	43122	1062	24899	36694	1016	23684	34657	969	22481	32669	923	21294	30733
	20	1210	32982	49775	1070	28635	42282	1024	27225	39912	978	25834	37605	931	24459	35357
	25	1218	38731	58558	1078	33547	49622	1032	31872	46804	986	30223	44064	939	28598	41400
	30	1221	41610	62940	1082	35994	53268	1035	34183	50222	989	32402	47264	942	30649	44389



Figure 4-23 (Sheet 3 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
1000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	5	1142	16051	23276	1003	13956	19874	956	13266	18786	910	12583	17724	864	11904	16686
	10	1151	16081	23484	1012	13998	20066	965	13312	18973	919	12633	17907	872	11956	16862
	15	1159	16489	24270	1019	14363	20741	973	13665	19616	927	12971	18514	880	12282	17438
	20	1164	17560	26092	1025	15299	22286	979	14557	21072	932	13819	19885	886	13088	18726
	25	1170	18858	28286	1030	16428	24139	984	15631	22819	938	14841	21529	891	14056	20268
	30	1173	20774	31377	1033	18083	26741	987	17203	25267	940	16329	23827	894	15463	22421
	35	1175	23126	35161	1036	20111	29921	990	19126	28257	943	18149	26632	897	17182	25047
	40	1183	26000	39676	1044	22594	33727	998	21483	31840	951	20383	29999	905	19296	28206
	45	1191	29685	45433	1052	25765	38565	1006	24490	36390	959	23230	34271	913	21986	32209
	50	1199	34462	52898	1060	29856	44810	1013	28362	42254	967	26891	39770	921	25439	37353
	52	1202	36813	56564	1063	31860	47865	1017	30259	45122	970	28679	42453	924	27124	39861
	5	1129	14893	21792	990	12935	18587	943	12290	17563	897	11650	16562	851	11015	15585
1 3 0 0 0	10	1138	14919	21985	999	12973	18766	952	12332	17738	906	11696	16733	859	11063	15750
	15	1145	15282	22701	1006	13298	19381	960	12646	18322	913	11997	17285	867	11354	16274
	20	1151	16235	24352	1012	14131	20779	965	13439	19640	919	12752	18526	873	12070	17438
	25	1156	17382	26328	1017	15129	22448	970	14389	21211	924	13655	20004	878	12926	18825
	30	1159	19064	29090	1020	16583	24772	973	15769	23398	927	14962	22056	880	14161	20745
	35	1161	21109	32443	1022	18346	27587	976	17442	26045	929	16545	24538	883	15656	23068
	40	1165	23660	36578	1025	20539	31053	979	19520	29301	932	18510	27591	886	17512	25926
	45	1172	26803	41592	1033	23249	35269	987	22091	33266	940	20944	31313	894	19812	29412
	50	1180	30809	47993	1041	26686	40627	994	25345	38298	948	24023	36032	902	22717	33826
	52	1183	32752	51095	1044	28346	43215	998	26917	40727	951	25507	38306	905	24115	35951
	5	1127	13759	20215	988	11955	17254	942	11361	16308	895	10769	15382	849	10182	14477
	10	1136	13785	20398	996	11989	17421	950	11398	16470	904	10811	15541	857	10226	14631
1 2 5 0 0	15	1138	14131	21127	999	12293	18035	953	11688	17048	906	11086	16083	860	10488	15139
	20	1138	15013	22731	998	13052	19375	952	12408	18306	905	11767	17260	859	11131	16239
	25	1142	16028	24513	1003	13937	20880	957	13250	19723	910	12566	18591	864	11889	17488
	30	1145	17510	26991	1006	15218	22963	959	14464	21680	913	13718	20429	866	12976	19206
	35	1147	19295	29972	1008	16757	25465	961	15924	24031	915	15099	22633	869	14281	21269
	40	1149	21510	33644	1010	18661	28539	963	17728	26918	917	16804	25337	871	15889	23796
	45	1153	24263	38164	1014	21025	32322	967	19968	30471	921	18922	28666	875	17886	26908
	50	1161	27650	43695	1022	23934	36952	975	22724	34819	929	21529	32743	882	20346	30720
	52	1164	29271	46344	1025	25323	39165	978	24038	36894	932	22771	34687	885	21517	32537
	5	1136	12688	18614	997	11043	15924	951	10501	15064	904	9961	14222	858	9425	13399
	10	1145	12710	18778	1006	11074	16074	959	10534	15210	913	9998	14365	866	9464	13537
	15	1147	13009	19423	1008	11337	16618	962	10786	15723	915	10237	14846	869	9692	13989
	20	1141	13801	20936	1001	12011	17870	955	11422	16893	909	10837	15938	862	10254	15002
1 0 0 0 0	25	1131	14767	22776	992	12830	19387	946	12193	18308	899	11560	17254	853	10931	16223
	30	1131	16091	25052	991	13969	21291	945	13272	20095	899	12580	18927	852	11892	17785
	35	1133	17654	27712	993	15316	23521	947	14550	22190	901	13789	20890	854	13033	19620
	40	1134	19574	30958	995	16968	26238	949	16114	24739	902	15266	23276	856	14427	21851
	45	1136	21967	34990	997	19019	29603	950	18054	27894	904	17099	26229	858	16154	24608
	50	1141	24887	39888	1002	21523	33693	955	20425	31732	909	19339	29822	862	18264	27961
	52	1144	26252	42169	1005	22693	35597	958	21533	33519	912	20386	31495	865	19251	29524
	5	1146	11727	17159	1007	10224	14714	961	9728	13932	914	9234	13166	868	8743	12417
	10	1155	11745	17304	1016	10251	14848	969	9757	14062	923	9267	13294	876	8778	12540
	15	1157	12006	17879	1018	10480	15332	972	9978	14520	925	9476	13722	879	8978	12943
	20	1150	12691	19217	1011	11066	16443	965	10530	15557	918	9997	14690	872	9467	13843
	25	1141	13521	20837	1001	11769	17777	955	11192	16802	908	10618	15849	862	10048	14918
	30	1119	14774	23206	980	12816	19710	933	12171	18596	887	11531	17509	840	10894	16447
1 1 0 0 0	35	1118	16163	25636	979	14008	21737	932	13299	20497	886	12596	19287	840	11898	18107
	40	1120	17834	28516	980	15443	24144	934	14660	22756	887	13881	21401	841	13109	20080
	45	1121	19893	32058	982	17209	27099	935	16329	25525	889	15458	23991	842	14594	22497
	50	1122	22429	36435	983	19377	30740	937	18380	28936	890	17391	27178	844	16413	25467
	52	1124	23611	38468	984	20386	32429	938	19334	30519	891	18291	28658	845	17260	26847
	5	1157	10858	15831	1017	9481	13607	971	9027	12896	924	8574	12199	878	8124	11517
	10	1165	10873	15959	1026	9505	13727	979	9053	13012	933	8603	12312	887	8156	11628
	15	1168	11102	16472	1028	9707	14160	982	9246	13420	935	8787	12696	889	8332	11988
	20	1160	11699	17663	1021	10218	15148	975	9730	14346	928	9243	13559	882	8759	12790
	25	1150	12415	19094	1011	10826	16329	965	10303	15448	918	9781	14585	872	9263	13742
	30	1128	13478	21166	989	11714	18019	942	11132	17016	896	10555	16037	850	9981	15081
	35	1106	14787	23673	966	12802	20056	920	12150	18907	873	11501	17784	827	10857	16689
	40	1104	16263	26291	965	14066	22234	918	13344	20946	872	12628	19690	825	11916	18463
	45	1105	18043	29416	966	15591	24838	919	14787	23386	873	13989	21970	826	13198	20590
	50	1106	20209	33237	967	17443	28014	920	16537	26359	874	15640	24748	827	14750	23177
	52	1106	21220	35024	967	18305	29496	921	17352	27747	874	16407	26042	828	15472	24383



Figure 4-23 (Sheet 4 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
2000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	0	1227	24036	33118	1087	21018	28462	1041	20033	26978	994	19055	25524	948	18088	24104
	5	1236	24470	34011	1097	21419	29242	1051	20421	27720	1004	19433	26232	958	18454	24777
	10	1246	24928	34961	1107	21838	30068	1061	20829	28508	1014	19828	26982	968	18838	25491
	15	1256	26926	37975	1117	23587	32643	1070	22497	30945	1024	21419	29286	977	20351	27663
	20	1265	29780	42194	1126	26073	36236	1080	24866	34342	1033	23671	32491	987	22491	30685
	25	1275	33492	47605	1135	29290	40828	1089	27926	38678	1042	26578	36580	996	25248	34534
	30	1284	38436	54716	1144	33556	46843	1098	31976	44350	1052	30420	41923	1005	28885	39556
	35	1293	45058	64140	1154	39232	54772	1107	37355	51816	1061	35509	48940	1014	33694	46144
	40	1302	54327	77120	1163	47109	65617	1116	44798	62004	1070	42534	58498	1023	40313	55095
	45	1311	68365	96439	1172	58888	81591	1125	55884	76960	1079	52955	72482	1032	50094	68149
1 5 0 0	50	1320	91565	127787	1181	77973	107072	1134	73734	100690	1088	69630	94552	1041	65654	88648
	0	1217	22979	31873	1078	20085	27374	1031	19137	25937	985	18200	24534	938	17269	23159
	5	1227	23383	32718	1088	20457	28111	1041	19499	26640	995	18551	25203	948	17611	23797
	10	1237	23808	33617	1097	20846	28891	1051	19878	27385	1004	18918	25911	958	17968	24471
	15	1246	25657	36439	1107	22467	31304	1060	21424	29667	1014	20393	28069	967	19371	26506
	20	1255	28286	40369	1116	24758	34651	1070	23609	32833	1023	22470	31055	977	21345	29321
	25	1265	31682	45375	1125	27705	38902	1079	26412	36847	1032	25134	34840	986	23872	32884
	30	1274	36164	51897	1134	31577	44421	1088	30090	42053	1042	28624	39745	995	27177	37495
	35	1283	42091	60438	1143	36667	51616	1097	34917	48830	1051	33195	46119	1004	31498	43479
	40	1292	50250	72019	1152	43620	61311	1106	41493	57943	1060	39405	54671	1013	37355	51493
1 4 0 0	45	1301	62304	88868	1161	53780	75287	1115	51068	71042	1069	48417	66930	1022	45824	62947
	50	1309	81479	115267	1170	69672	96873	1124	65967	91181	1077	62366	85692	1031	58868	80402
	0	1203	21305	29851	1064	18609	25614	1017	17725	24260	971	16850	22937	924	15981	21642
	5	1213	21663	30624	1073	18939	26287	1027	18047	24903	981	17163	23549	934	16286	22225
	10	1222	22038	31443	1083	19285	27000	1036	18383	25582	990	17489	24195	944	16604	22841
	15	1229	23700	34052	1090	20737	29221	1044	19769	27683	997	18808	26177	951	17858	24708
	20	1239	26002	37557	1099	22745	32206	1053	21682	30503	1007	20630	28840	960	19588	27215
	25	1248	28942	41974	1108	25301	35959	1062	24115	34047	1016	22942	32182	969	21782	30361
	30	1257	32771	47654	1117	28614	40768	1071	27264	38585	1025	25932	36457	978	24614	34380
	35	1266	37740	54963	1126	32894	46935	1080	31326	44396	1034	29780	41923	987	28255	39514
1 3 0 0	40	1274	44412	64647	1135	38603	55063	1089	36732	52042	1042	34891	49103	996	33081	46247
	45	1283	53931	78289	1144	46674	66428	1098	44353	62707	1051	42076	59096	1005	39846	55595
	50	1292	68309	98675	1153	58708	83221	1106	55667	78408	1060	52701	73756	1013	49807	69260
	0	1191	19748	27928	1051	17238	23944	1005	16415	22672	959	15600	21429	912	14790	20212
	5	1200	20064	28631	1061	17532	24558	1014	16701	23257	968	15878	21986	922	15061	20743
	10	1210	20395	29375	1070	17837	25205	1024	16999	23875	977	16167	22574	931	15343	21302
	15	1215	21878	31761	1076	19131	27232	1030	18233	25790	983	17340	24377	937	16457	22999
	20	1222	23941	34995	1082	20926	29976	1036	19941	28378	990	18965	26818	943	17997	25292
	25	1231	26500	38912	1091	23153	33304	1045	22061	31521	998	20980	29780	952	19911	28082
	30	1239	29791	43890	1100	26006	37522	1054	24775	35502	1007	23556	33529	961	22353	31607
1 2 0 0	35	1248	33995	50201	1109	29635	42852	1062	28219	40523	1016	26823	38256	970	25445	36046
	40	1257	39522	58399	1118	34378	49744	1071	32715	47011	1025	31078	44351	978	29464	41762
	45	1265	47177	69639	1126	40900	59137	1080	38882	55833	1033	36900	52624	987	34953	49508
	50	1274	58276	85817	1135	50257	72534	1088	47700	68380	1042	45198	64356	995	42749	60459
	0	1178	18318	26145	1039	15979	22398	992	15211	21201	946	14450	20031	900	13694	18886
	5	1187	18598	26787	1048	16240	22958	1002	15466	21735	955	14697	20539	909	13935	19370
	10	1197	18892	27466	1058	16512	23549	1011	15730	22298	965	14956	21076	918	14186	19880
	15	1202	20201	29612	1063	17655	25371	1017	16821	24019	970	15992	22697	924	15172	21406
	20	1207	22032	32553	1068	19246	27860	1021	18333	26365	975	17430	24906	928	16533	23479
	25	1213	24309	36137	1074	21223	30895	1027	20213	29227	981	19215	27600	935	18226	26011
1 1 0 0	30	1222	27156	40526	1083	23693	34614	1036	22563	32736	990	21447	30905	943	20341	29117
	35	1230	30739	46014	1091	26791	39252	1045	25507	37108	998	24238	35018	952	22985	32981
	40	1239	35364	53024	1100	30770	45152	1053	29281	42663	1007	27813	40239	960	26363	37878
	45	1247	41614	62419	1108	36114	53020	1062	34340	50058	1015	32593	47177	969	30875	44378
	50	1256	50379	75536	1117	43545	63924	1070	41354	60280	1024	39205	56746	977	37096	53318
	0	1165	17002	24489	1026	14818	20960	980	14102	19834	933	13389	18730	887	12682	17652
	5	1175	17251	25076	1035	15051	21472	989	14328	20321	943	13611	19196	896	12898	18095
	10	1184	17511	25696	1045	15293	22012	998	14564	20836	952	13841	19686	905	13122	18561
	15	1189	18670	27632	1050	16306	23655	1004	15530	22387	957	14759	21147	911	13996	19936
	20	1194	20281	30267	1054	17705	25883	1008	16861	24487	962	16025	23125	915	15194	21791
1 0 0	25	1197	22299	33528	1058	19454	28637	1012	18523	27081	965	17600	25561	919	16686	24079
	30	1204	24806	37493	1065	21627	31989	1018	20587	30239	972	19560	28534	925	18541	26868
	35	1212	27880	42298	1073	24287	36049	1027	23117	34068	980	21959	32134	934	20814	30250
	40	1221	31785	48343	1081	27653	41142	1035	26311	38862	989	24986	36642	942	23677	34479
	45	1229	36952	56291	1090	32084	47808	1043	30508	45129	997	28956	42524	950	27425	39989
1 0 0	50	1237	43998	67107	1098	38084	56823	1052	36180	53589	1005	34308	50447	959	32468	47398



Figure 4-23 (Sheet 5 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
2000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	0	1153	15786	22944	1013	13745	19618	967	13074	18556	920	12407	17517	874	11746	16501
	5	1162	16007	23482	1022	13952	20087	976	13277	19004	930	12607	17945	883	11940	16908
	10	1171	16238	24049	1031	14167	20580	985	13487	19474	939	12812	18392	892	12140	17334
	15	1176	17267	25799	1037	15068	22066	990	14345	20876	944	13628	19712	898	12916	18575
	20	1180	18687	28166	1041	16303	24068	995	15520	22762	948	14743	21485	902	13973	20239
	25	1184	20455	31076	1045	17835	26523	998	16975	25073	952	16124	23658	905	15279	22276
	30	1187	22678	34695	1048	19755	29570	1001	18798	27940	955	17851	26351	908	16912	24799
	35	1194	25351	38972	1055	22068	33179	1008	20995	31340	962	19935	29547	915	18884	27798
	40	1202	28672	44223	1063	24935	37604	1016	23717	35506	970	22515	33463	924	21326	31473
	45	1210	32987	51012	1071	28643	43304	1025	27233	40867	978	25841	38494	932	24468	36186
1 3 0 0	50	1218	38737	60058	1079	33555	50857	1033	31881	47958	986	30232	45139	940	28608	42401
	0	1140	14657	21496	1000	12748	18361	954	12121	17361	907	11496	16380	861	10877	15424
	5	1149	14855	21990	1009	12934	18791	963	12303	17771	916	11674	16772	870	11051	15796
	10	1157	15059	22508	1018	13126	19243	972	12491	18203	925	11858	17183	879	11231	16188
	15	1163	15976	24096	1023	13927	20589	977	13254	19471	930	12584	18377	884	11920	17309
	20	1167	17232	26228	1027	15019	22390	981	14293	21168	934	13571	19973	888	12855	18806
	25	1170	18784	28831	1031	16365	24586	984	15571	23234	938	14784	21915	891	14002	20625
	30	1173	20719	32042	1033	18037	27288	987	17159	25777	941	16288	24301	894	15424	22861
	35	1175	23089	35957	1036	20080	30575	990	19096	28867	943	18121	27200	897	17156	25575
	40	1183	25939	40562	1044	22542	34455	997	21433	32518	951	20336	30630	905	19252	28792
1 2 5 0 0	45	1191	29574	46410	1052	25670	39365	1005	24400	37136	959	23146	34967	913	21906	32853
	50	1199	34323	54061	1060	29738	45763	1013	28251	43143	967	26786	40596	920	25340	38119
	0	1143	13526	19868	1004	11778	16995	957	11201	16077	911	10629	15179	865	10060	14301
	5	1152	13703	20318	1012	11943	17386	966	11364	16451	920	10788	15535	873	10215	14639
	10	1160	13886	20791	1021	12115	17798	975	11533	16844	928	10952	15908	882	10376	14995
	15	1150	14776	22485	1011	12870	19197	964	12242	18147	918	11619	17123	872	10999	16120
	20	1153	15897	24431	1013	13841	20835	967	13166	19690	921	12495	18571	874	11828	17477
	25	1156	17263	26766	1017	15027	22804	970	14292	21542	924	13563	20311	877	12838	19107
	30	1158	18953	29625	1019	16487	25208	973	15679	23804	926	14876	22432	880	14080	21094
	35	1161	21004	33080	1022	18255	28108	975	17354	26527	929	16462	24987	882	15578	23485
1 2 0 0	40	1164	23521	37282	1024	20418	31627	978	19405	29834	932	18402	28087	885	17408	26383
	45	1172	26605	42354	1032	23076	35887	986	21927	33841	939	20789	31846	893	19665	29905
	50	1179	30567	48889	1040	26477	41355	994	25148	38975	947	23835	36658	901	22539	34405
	0	1152	12486	18305	1013	10891	15695	967	10365	14860	920	9841	14043	874	9321	13244
	5	1161	12643	18708	1022	11039	16046	976	10510	15195	929	9984	14363	883	9461	13549
	10	1170	12805	19130	1031	11192	16415	984	10659	15546	938	10131	14698	891	9604	13867
	15	1159	13569	20624	1020	11840	17648	974	11270	16698	927	10703	15768	881	10140	14860
	20	1143	14638	22669	1004	12740	19326	958	12116	18262	911	11494	17220	865	10877	16203
	25	1142	15874	24859	1002	13802	21157	956	13121	19978	909	12444	18827	863	11773	17704
	30	1144	17355	27413	1005	15083	23303	958	14336	21996	912	13596	20720	865	12860	19474
1 5 0 0	35	1146	19135	30472	1007	16617	25869	960	15791	24406	914	14972	22979	868	14160	21588
	40	1148	21304	34176	1009	18482	28969	962	17558	27317	916	16643	25706	870	15736	24136
	45	1152	23998	38745	1012	20794	32789	966	19748	30902	919	18712	29063	873	17687	27273
	50	1159	27331	44370	1020	23659	37496	973	22462	35322	927	21280	33206	881	20111	31147
	0	1163	11552	16884	1023	10092	14510	977	9611	13751	930	9131	13007	884	8654	12279
	5	1171	11691	17243	1032	10224	14824	986	9741	14052	939	9259	13294	893	8780	12553
	10	1180	11835	17621	1041	10361	15155	994	9874	14366	948	9391	13595	902	8909	12840
	15	1169	12496	18946	1030	10922	16249	984	10403	15387	937	9887	14545	891	9373	13721
	20	1153	13411	20745	1014	11693	17726	967	11126	16763	921	10564	15823	874	10004	14903
	25	1134	14560	22966	994	12655	19542	948	12029	18453	902	11407	17389	855	10788	16350
1 1 0 0	30	1129	15900	25377	990	13802	21549	943	13112	20331	897	12428	19144	851	11748	17984
	35	1131	17451	28097	992	15139	23828	945	14380	22472	899	13627	21149	852	12879	19857
	40	1133	19322	31359	993	16748	26557	947	15904	25032	901	15068	23547	854	14238	22098
	45	1134	21642	35396	995	18737	29925	949	17787	28191	902	16845	26501	856	15912	24855
	50	1138	24516	40387	999	21200	34087	953	20118	32094	906	19046	30152	860	17987	28264
	0	1173	10704	15582	1034	9367	13424	987	8925	12733	941	8485	12055	894	8047	11392
	5	1182	10829	15905	1043	9486	13707	996	9042	13003	950	8601	12315	903	8161	11640
	10	1191	10959	16244	1051	9608	14003	1005	9163	13287	959	8720	12585	912	8278	11898
	15	1180	11533	17423	1040	10097	14977	994	9623	14196	947	9151	13431	901	8682	12683
	20	1163	12321	19015	1024	10762	16286	977	10247	15415	931	9735	14563	884	9226	13730
1 1 0 0	25	1143	13298	20961	1004	11581	17879	957	11014	16895	911	10452	15936	865	9893	14999
	30	1121	14529	23364	982	12609	19839	935	11976	18716	889	11348	17621	842	10724	16552
	35	1115	15927	25925	976	13800	21961	930	13101	20702	883	12407	19473	837	11718	18275
	40	1117	17549	28812	977	15193	24372	931	14421	22964	885	13654	21590	838	12893	20251
	45	1118	19537	32348	979	16898	27321	932	16033	25726	886	15176	24174	839	14326	22660
50		1119	22011	36765	980	19013	30992	934	18033	29165	887	17062	27386	841	16101	25655



Figure 4-23 (Sheet 6 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
3000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	0	1247	24106	33756	1107	21128	29051	1061	20154	27551	1014	19189	26082	968	18234	24648
	5	1257	25092	35390	1117	22004	30460	1071	20996	28890	1024	19996	27352	978	19007	25851
	10	1266	26441	37547	1127	23196	32314	1081	22137	30647	1034	21087	29017	988	20049	27425
	15	1276	29345	41822	1137	25729	35961	1090	24550	34096	1044	23385	32276	998	22233	30498
	20	1286	32970	47140	1146	28878	40484	1100	27549	38371	1054	26236	36310	1007	24938	34297
	25	1295	37632	53899	1156	32911	46214	1110	31382	43780	1063	29873	41406	1017	28386	39094
	30	1305	43839	62819	1165	38246	53737	1119	36443	50870	1072	34667	48078	1026	32921	45363
	35	1314	52205	74688	1175	45383	63687	1128	43195	60227	1082	41049	56867	1035	38942	53604
	40	1323	64377	91669	1184	55653	77795	1137	52878	73457	1091	50168	69257	1045	47519	65191
	45	1332	83834	118287	1193	71796	99597	1147	68020	93813	1100	64352	88236	1054	60791	82863
1 5 0 0	48	1338	102319	143043	1198	86829	119532	1152	82031	112325	1106	77400	105409	1059	72926	98770
	0	1237	23047	32489	1098	20190	27942	1051	19255	26492	1005	18329	25073	958	17410	23685
	5	1247	23962	34027	1108	21005	29269	1061	20037	27751	1015	19079	26268	968	18129	24817
	10	1257	25212	36051	1117	22108	31007	1071	21094	29400	1024	20089	27828	978	19095	26294
	15	1266	27889	40036	1127	24445	34407	1080	23322	32616	1034	22211	30867	988	21112	29159
	20	1276	31207	44960	1136	27331	38597	1090	26070	36575	1044	24824	34603	997	23592	32678
	25	1285	35438	51166	1146	30996	43862	1099	29554	41545	1053	28132	39288	1007	26729	37087
	30	1294	41004	59267	1155	35789	50702	1109	34104	47994	1062	32444	45357	1016	30810	42792
	35	1304	48392	69893	1164	42108	59625	1118	40088	56391	1071	38103	53247	1025	36154	50193
	40	1313	58909	84793	1173	51016	72038	1127	48498	68042	1081	46034	64170	1034	43619	60413
1 5 0 0	45	1322	75179	107457	1183	64603	90695	1136	61266	85487	1090	58017	80457	1043	54853	75600
	48	1327	90048	127799	1188	76814	107205	1142	72682	100856	1095	68678	94746	1049	64797	88867
	0	1223	21364	30421	1084	18704	26140	1037	17832	24774	991	16968	23438	944	16111	22131
	5	1231	22189	31851	1092	19436	27369	1046	18535	25940	999	17641	24542	953	16756	23176
	10	1240	23311	33722	1101	20426	28971	1054	19481	27456	1008	18546	25977	961	17618	24529
	15	1249	25658	37280	1110	22476	32007	1064	21437	30329	1017	20408	28689	971	19389	27087
	20	1259	28534	41630	1119	24980	35708	1073	23823	33827	1027	22678	31991	980	21544	30197
	25	1268	32154	47045	1129	28123	40307	1082	26811	38168	1036	25516	36082	989	24237	34048
	30	1277	36833	53997	1138	32162	46185	1091	30648	43711	1045	29156	41302	999	27684	38956
	35	1286	42905	62929	1147	37375	53702	1100	35590	50790	1054	33834	47957	1008	32107	45203
1 5 0 0	40	1295	51283	75098	1156	44510	63878	1109	42337	60352	1063	40206	56929	1017	38115	53607
	45	1304	63672	92857	1165	54943	78589	1118	52167	74133	1072	49456	69821	1026	46806	65647
	48	1309	74425	108062	1170	63886	91052	1124	60561	85770	1077	57323	80669	1031	54170	75747
	0	1210	19803	28462	1071	17327	24438	1025	16515	23154	978	15709	21897	932	14910	20669
	5	1219	20532	29754	1079	17974	25547	1033	17136	24206	987	16306	22895	940	15481	21612
	10	1226	21525	31452	1087	18851	27001	1041	17976	25582	994	17106	24194	948	16246	22839
	15	1232	23642	34764	1093	20694	29814	1046	19729	28237	1000	18774	26697	954	17828	25193
	20	1241	26147	38625	1102	22878	33101	1056	21811	31344	1009	20754	29628	963	19708	27953
	25	1250	29264	43380	1111	25586	37138	1065	24389	35157	1018	23204	33222	972	22033	31336
	30	1259	33230	49396	1120	29018	42230	1074	27650	39959	1027	26299	37745	981	24966	35589
1 5 0 0	35	1268	38279	56989	1129	33365	48631	1083	31776	45990	1036	30208	43417	990	28663	40913
	40	1277	45067	67089	1138	39171	57100	1092	37273	53954	1045	35405	50895	999	33570	47924
	45	1286	54745	81344	1147	47374	68963	1100	45016	65081	1054	42706	61318	1007	40441	57668
	48	1291	62818	93114	1152	54150	78675	1106	51394	74169	1059	48700	69807	1013	46067	65587
	0	1198	18371	26649	1058	16062	22861	1012	15304	21652	965	14552	20470	919	13806	19315
	5	1206	19015	27817	1067	16637	23867	1020	15855	22605	974	15081	21373	927	14312	20167
	10	1213	19892	29347	1074	17411	25176	1028	16597	23845	981	15789	22544	935	14989	21273
	15	1218	21765	32344	1079	19040	27716	1032	18147	26241	986	17263	24801	939	16385	23393
	20	1224	24003	35899	1084	20984	30728	1038	19998	29084	992	19021	27479	945	18053	25911
	25	1233	26702	40096	1093	23332	34293	1047	22233	32450	1001	21146	30652	954	20069	28896
1 4 0 0	30	1241	30088	45340	1102	26267	38734	1056	25024	36639	1009	23795	34596	963	22580	32604
	35	1250	34328	51856	1111	29927	44234	1065	28499	41822	1018	27089	39471	972	25699	37184
	40	1259	39903	60350	1120	34712	51371	1073	33033	48535	1027	31381	45779	980	29753	43098
	45	1268	47619	72015	1128	41282	61107	1082	39247	57679	1036	37248	54351	989	35283	51120
	48	1273	53854	81370	1133	46552	68865	1087	44216	64947	1041	41928	61151	994	39684	57470
	0	1185	17051	24962	1045	14895	21394	999	14188	20257	952	13484	19142	906	12787	18055
	5	1193	17623	26023	1054	15406	22307	1007	14678	21121	961	13955	19962	914	13237	18828
	10	1200	18398	27404	1061	16092	23489	1014	15334	22240	968	14583	21020	922	13837	19826
	15	1204	20047	30091	1065	17527	25766	1019	16701	24388	972	15880	23040	926	15068	21726
	20	1209	22023	33307	1069	19241	28485	1023	18331	26951	976	17428	25452	930	16534	23990
1 4 0 0	25	1215	24413	37131	1075	21315	31721	1029	20304	30004	982	19301	28325	936	18309	26689
	30	1223	27322	41729	1084	23841	35617	1038	22706	33678	991	21582	31785	945	20471	29940
	35	1232	30914	47369	1093	26945	40379	1046	25654	38164	1000	24380	36008	953	23119	33904
	40	1240	35545	54589	1101	30930	46453	1055	29435	43883	1008	27959	41379	962	26505	38945
	45	1249	41797	64283	1110	36276	54564	1063	34494	51502	1017	32742	48528	970	31017	45637
	48	1254	46720	71874	1115	40459	60882	1068	38446	57428	1022	36469	54076	975	34526	50822

Figure 4-23 (Sheet 7 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
3000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	0	1171	15830	23387	1032	13817	20027	986	13155	18954	939	12497	17905	893	11843	16878
	5	1180	16339	24352	1040	14271	20855	994	13591	19739	947	12916	18648	901	12245	17581
	10	1187	17027	25604	1047	14879	21925	1001	14174	20752	955	13474	19606	908	12778	18485
	15	1191	18484	28020	1052	16148	23972	1005	15381	22682	959	14620	21421	912	13864	20189
	20	1195	20214	30890	1055	17649	26397	1009	16810	24969	963	15977	23573	916	15149	22208
	25	1198	22324	34359	1059	19477	29325	1012	18545	27724	966	17622	26162	920	16708	24639
	30	1205	24870	38490	1065	21683	32815	1019	20642	31013	972	19611	29255	926	18592	27542
	35	1213	27932	43402	1074	24334	36965	1027	23161	34923	981	22003	32936	935	20856	30997
	40	1221	31816	49598	1082	27683	42181	1036	26341	39836	989	25014	37550	943	23705	35326
	45	1230	36951	57757	1090	32086	49018	1044	30512	46261	998	28961	43581	951	27430	40972
1 3 5 0 0	48	1235	40908	64021	1095	35462	54244	1049	33705	51166	1003	31976	48176	956	30273	45271
	0	1158	14699	21913	1019	12816	18745	973	12196	17734	926	11580	16745	880	10968	15777
	5	1166	15152	22791	1027	13221	19499	980	12585	18448	934	11954	17422	888	11327	16418
	10	1173	15763	23927	1034	13762	20470	988	13105	19369	941	12450	18290	895	11801	17237
	15	1177	17053	26105	1038	14885	22314	991	14172	21105	945	13465	19924	899	12763	18771
	20	1181	18573	28675	1041	16204	24483	995	15428	23150	949	14657	21847	902	13891	20574
	25	1184	20412	31757	1045	17798	27084	998	16941	25597	952	16092	24147	905	15249	22730
	30	1187	22658	35512	1048	19738	30243	1001	18782	28569	955	17836	26937	908	16898	25344
	35	1194	25306	39867	1055	22030	33917	1008	20959	32028	962	19901	30189	915	18853	28396
	40	1202	28591	45226	1063	24866	38430	1016	23652	36277	970	22454	34182	924	21269	32141
1 2 5 0 0	45	1210	32853	52162	1071	28530	44250	1025	27127	41750	978	25741	39316	932	24374	36949
	48	1215	36081	57404	1076	31291	48628	1029	29740	45860	983	28212	43170	937	26705	40554
	0	1163	13558	20228	1024	11835	17331	977	11267	16405	931	10703	15501	884	10141	14615
	5	1165	13984	21107	1026	12208	18072	980	11623	17103	933	11041	16156	887	10463	15229
	10	1164	14570	22280	1025	12714	19053	978	12102	18023	932	11495	17017	885	10891	16033
	15	1163	15739	24329	1024	13724	20774	977	13061	19641	931	12403	18534	885	11750	17454
	20	1167	17078	26635	1027	14887	22721	981	14167	21475	934	13452	20257	888	12743	19069
	25	1169	18685	29382	1030	16280	25037	984	15491	23655	937	14707	22305	891	13930	20988
	30	1172	20630	32700	1033	17960	27827	987	17086	26280	940	16218	24768	894	15358	23295
	35	1175	22966	36667	1036	19973	31156	989	18994	29408	943	18025	27703	896	17064	26041
1 2 5 0 0	40	1182	25772	41354	1043	22397	35102	997	21296	33121	950	20206	31190	904	19128	29310
	45	1190	29344	47306	1051	25472	40097	1005	24213	37818	958	22968	35598	912	21738	33438
	48	1195	32008	51740	1056	27757	43805	1009	26376	41299	963	25014	38862	917	23670	36493
	0	1172	12514	18627	1033	10942	15996	987	10424	15155	940	9908	14332	894	9395	13526
	5	1175	12886	19409	1036	11269	16656	989	10735	15776	943	10205	14916	896	9677	14074
	10	1173	13391	20445	1034	11706	17523	988	11151	16591	941	10598	15678	895	10049	14786
	15	1156	14489	22546	1017	12631	19250	970	12019	18199	924	11412	17174	877	10807	16170
	20	1152	15710	24748	1013	13680	21090	966	13012	19925	920	12349	18787	874	11691	17677
	25	1155	17120	27205	1016	14902	23159	969	14173	21872	923	13450	20616	876	12731	19389
	30	1157	18810	30148	1018	16362	25632	972	15559	24197	925	14762	22797	879	13972	21431
1 5 0 0	35	1160	20820	33634	1020	18093	28555	974	17201	26944	928	16317	25373	881	15440	23841
	40	1162	23287	37896	1023	20216	32125	976	19211	30294	930	18218	28513	884	17234	26776
	45	1170	26305	43041	1031	22817	36443	984	21679	34355	938	20554	32321	891	19441	30342
	48	1175	28524	46826	1035	24723	39610	989	23486	37329	943	22264	35110	896	21055	32950
	0	1183	11576	17170	1044	10139	14779	997	9664	14014	951	9192	13266	904	8721	12532
	5	1185	11901	17865	1046	10425	15368	999	9937	14568	953	9453	13787	907	8971	13023
	10	1183	12341	18787	1044	10806	16139	998	10300	15293	951	9796	14466	905	9295	13656
	15	1165	13281	20637	1026	11599	17660	980	11045	16712	933	10493	15783	887	9945	14876
	20	1147	14402	22823	1008	12542	19455	961	11929	18381	915	11321	17334	869	10716	16310
	25	1140	15694	25200	1001	13645	21429	954	12970	20228	908	12302	19059	861	11636	17914
1 0 0	30	1142	17168	27818	1003	14918	23628	956	14179	22296	910	13446	20996	864	12718	19729
	35	1144	18904	30894	1005	16415	26206	959	15599	24718	912	14789	23267	866	13986	21852
	40	1146	21015	34624	1007	18230	29327	961	17319	27648	914	16414	26009	868	15519	24414
	45	1149	23647	39261	1010	20489	33199	963	19456	31279	917	18435	29410	871	17424	27590
	48	1154	25513	42520	1014	22093	35925	968	20978	33840	921	19874	31809	875	18783	29834
	0	1194	10726	15837	1054	9408	13663	1008	8974	12968	961	8540	12286	915	8109	11619
	5	1196	11013	16460	1056	9662	14191	1010	9216	13466	964	8772	12755	917	8330	12060
	10	1194	11398	17281	1055	9997	14881	1008	9533	14112	962	9073	13361	915	8615	12627
	15	1176	12208	18919	1036	10680	16228	990	10176	15368	943	9674	14528	897	9176	13707
	20	1157	13164	20839	1017	11484	17803	971	10931	16836	925	10381	15891	878	9833	14967
1 0 0	25	1135	14331	23151	996	12462	19695	950	11847	18595	903	11234	17520	857	10627	16472
	30	1126	15680	25687	987	13608	21792	940	12926	20553	894	12250	19346	848	11578	18168
	35	1128	17186	28412	989	14906	24074	942	14157	22697	896	13415	21355	850	12677	20044
	40	1130	19000	31689	990	16465	26812	944	15634	25266	898	14811	23760	851	13993	22290
	45	1131	21248	35750	992	18393	30199	946	17459	28441	899	16533	26728	853	15616	25061
	48	1132	22878	38694	993	19787	32648	947	18777	30735	900	17777	28872	854	16787	27060



Figure 4-23 (Sheet 8 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	0	1267	25356	36003	1128	22259	31009	1081	21246	29417	1035	20244	27861	988	19250	26338
	5	1277	26770	38236	1138	23508	32931	1091	22442	31240	1045	21388	29589	999	20345	27976
	10	1287	29119	41772	1148	25564	35956	1101	24405	34106	1055	23259	32299	1009	22126	30535
	15	1297	32605	46902	1158	28600	40330	1111	27296	38241	1065	26010	36204	1018	24738	34216
	20	1307	37019	53360	1167	32425	45814	1121	30937	43423	1075	29468	41092	1028	28019	38819
	25	1316	42764	61700	1177	37379	52867	1131	35641	50077	1084	33928	47358	1038	32243	44712
	30	1326	50578	72922	1187	44066	62300	1140	41975	58956	1094	39922	55706	1047	37905	52548
	35	1335	61405	88241	1196	53244	75076	1150	50642	70953	1103	48096	66957	1057	45605	63084
	40	1345	78160	111465	1206	67240	94212	1159	63798	88854	1113	60450	83681	1066	57190	78687
	45	1354	107458	270945	1215	91134	126123	1169	86091	118516	1122	81229	111223	1076	76538	104228
1 6 0 0	0	1257	24207	34609	1118	21241	29789	1071	20270	28252	1025	19310	26750	979	18358	25282
	5	1267	25517	36703	1128	22399	31592	1082	21380	29963	1035	20371	28371	989	19372	26816
	10	1277	27683	40002	1138	24297	34415	1091	23191	32636	1045	22098	30899	999	21017	29203
	15	1287	30876	44755	1148	27080	38468	1101	25843	36469	1055	24622	34519	1008	23414	32616
	20	1296	34884	50690	1157	30559	43512	1111	29155	41236	1064	27768	39015	1018	26400	36850
	25	1306	40046	58279	1167	35017	49936	1120	33389	47295	1074	31787	44726	1028	30207	42222
	30	1316	46963	68351	1176	40950	58415	1130	39016	55283	1083	37113	52237	1037	35243	49276
	35	1325	56367	81861	1186	48951	69712	1139	46579	65899	1093	44255	62200	1046	41976	58611
	40	1334	70503	101802	1195	60827	86214	1149	57762	81357	1102	54773	76660	1056	51857	72119
	45	1344	94082	134305	1204	80245	112665	1158	75934	106004	1111	71759	99596	1065	67717	93435
1 5 5 0 0	0	1242	22397	32361	1103	19640	27829	1057	18738	26385	1010	17843	24971	964	16956	23590
	5	1250	23583	34320	1111	20685	29507	1065	19737	27974	1018	18797	26474	972	17867	25010
	10	1260	25481	37266	1121	22350	32029	1074	21327	30362	1028	20314	28733	982	19312	27143
	15	1270	28252	41471	1130	24768	35615	1084	23632	33753	1038	22509	31936	991	21396	30161
	20	1279	31685	46657	1140	27754	40026	1093	26474	37920	1047	25211	35868	1001	23963	33866
	25	1289	36035	53189	1149	31519	45561	1103	30055	43146	1056	28610	40791	1010	27185	38498
	30	1298	41738	61684	1159	36430	52730	1112	34715	49901	1066	33027	47149	1019	31364	44470
	35	1307	49285	72797	1168	42883	62054	1121	40825	58673	1075	38805	55389	1029	36820	52198
	40	1316	60181	88605	1177	52105	75207	1131	49530	71014	1084	47010	66951	1038	44544	63015
	45	1325	77252	112939	1186	66340	95203	1140	62902	89700	1093	59556	84390	1047	56300	79266
1 5 0 0	0	1230	20716	30220	1090	18156	25969	1044	17318	24614	997	16485	23287	951	15661	21992
	5	1237	21766	31994	1098	19082	27488	1051	18202	26051	1005	17331	24647	958	16466	23274
	10	1243	23490	34769	1103	20587	29849	1057	19637	28282	1011	18697	26752	964	17764	25256
	15	1252	25905	38505	1113	22697	33035	1066	21649	31295	1020	20612	29596	974	19586	27939
	20	1262	28864	43064	1122	25273	36914	1076	24103	34960	1029	22946	33055	983	21802	31195
	25	1271	32559	48729	1132	28479	41720	1085	27152	39497	1039	25843	37331	992	24549	35219
	30	1280	37314	55973	1141	32585	47841	1094	31052	45268	1048	29542	42764	1001	28052	40325
	35	1289	43467	65253	1150	37866	55646	1103	36059	52616	1057	34282	49671	1011	32533	46807
	40	1298	52061	78060	1159	45182	66345	1112	42977	62667	1066	40814	59098	1020	38691	55634
	45	1307	64890	96924	1168	55977	81950	1121	53145	72729	1075	50380	72761	1029	47679	68391
1 4 5 0 0	0	1216	19179	28245	1077	16799	24253	1031	16019	22981	984	15243	21735	938	14474	20517
	5	1224	20106	29844	1084	17616	25620	1038	16800	24274	992	15991	22959	945	15187	21672
	10	1229	21620	32331	1090	18940	27737	1044	18062	26274	997	17191	24843	951	16328	23446
	15	1234	23794	35808	1095	20831	30688	1049	19862	29058	1002	18901	27466	956	17951	25913
	20	1244	26358	39838	1104	23065	34115	1058	21990	32296	1011	20926	30521	965	19874	28790
	25	1253	29518	44785	1113	25811	38314	1067	24604	36261	1021	23411	34259	974	22230	32306
	30	1262	33521	51019	1122	29274	43586	1076	27896	41234	1030	26535	38941	983	25190	36706
	35	1271	38602	58865	1131	33649	50196	1085	32047	47459	1039	30468	44795	992	28911	42202
	40	1280	45507	69423	1140	39554	59043	1094	37638	55776	1047	35753	52601	1001	33901	49518
	45	1288	55423	84436	1149	47956	71523	1103	45569	67479	1056	43230	63560	1010	40938	59762
1 4 0 0	0	1203	17769	26416	1064	15552	22663	1018	14825	21467	971	14101	20295	925	13384	19151
	5	1210	18588	27859	1071	16276	23898	1025	15517	22635	978	14763	21400	932	14015	20193
	10	1216	19923	30093	1076	17441	25795	1030	16628	24427	984	15822	23091	937	15020	21782
	15	1220	21835	33221	1080	19104	28447	1034	18210	26927	988	17324	25444	941	16445	23994
	20	1225	24115	36919	1086	21086	31580	1040	20096	29884	993	19115	28227	947	18143	26610
	25	1234	26835	41266	1095	23452	35270	1049	22349	33368	1002	21256	31510	956	20175	29699
	30	1243	30231	46672	1104	26395	39844	1057	25147	37681	1011	23913	35572	965	22694	33517
	35	1252	34472	53373	1113	30056	45498	1066	28623	43007	1020	27209	40581	973	25813	38220
	40	1261	40104	62204	1121	34888	52910	1075	33203	49979	1028	31543	47129	982	29909	44359
	45	1269	47939	74401	1130	41562	63085	1084	39514	59532	1037	37501	56081	991	35525	52735
1 4 0 0	0	1271	49892	77420	1132	43216	65592	1085	41073	61879	1039	38972	58280	992	36908	54788



Figure 4-23 (Sheet 9 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	SECOND FT	THIRD FT	FT	SECOND FT	THIRD FT	FT	SECOND FT	THIRD FT
1 3 5 0 0	0	1190	16470	24715	1051	14403	21184	1004	13723	20057	958	13048	18956	911	12377	17879
	5	1197	17198	26023	1058	15046	22302	1011	14338	21115	965	13636	19955	918	12938	18821
	10	1202	18375	28031	1063	16075	24009	1016	15320	22727	970	14571	21475	923	13826	20250
	15	1206	20051	30826	1066	17532	26375	1020	16707	24959	974	15888	23575	927	15075	22223
	20	1209	22056	34162	1070	19273	29197	1024	18362	27618	977	17458	26075	931	16563	24570
	25	1215	24450	38101	1076	21350	32528	1030	20338	30759	983	19334	29031	937	18341	27348
	30	1224	27351	42820	1085	23868	36523	1038	22731	34524	992	21608	32578	946	20497	30680
	35	1233	30923	48594	1093	26956	41396	1047	25666	39117	1001	24392	36898	954	23133	34736
	40	1241	35572	56065	1102	30957	47676	1056	29462	45028	1009	27986	42449	963	26531	39942
	45	1250	41876	66143	1111	36347	56103	1064	34563	52942	1018	32809	49873	971	31081	46890
	46	1251	43415	68592	1112	37658	58144	1066	35803	54857	1019	33978	51665	973	32183	48566
	1 3 0 0	0	1176	15269	23126	1037	13340	19804	991	12705	18743	944	12074	17706	898	11447
5		1183	15916	24313	1044	13911	20817	997	13251	19701	951	12597	18612	905	11946	17547
10		1188	16958	26125	1049	14823	22356	1002	14121	21155	956	13424	19981	910	12732	18834
15		1192	18432	28629	1052	16104	24474	1006	15340	23152	959	14582	21860	913	13830	20598
20		1195	20179	31595	1056	17622	26982	1009	16783	25514	963	15951	24080	917	15127	22682
25		1198	22283	35156	1059	19443	29984	1013	18514	28341	966	17592	26737	920	16680	25174
30		1205	24808	39377	1065	21630	33547	1019	20593	31699	973	19566	29895	926	18548	28137
35		1213	27839	44389	1074	24256	37780	1028	23088	35686	981	21933	33645	935	20791	31658
40		1222	31718	50772	1082	27600	43150	1036	26262	40740	989	24940	38393	943	23636	36111
45		1230	36861	59211	1091	32011	50217	1044	30441	47381	998	28894	44624	951	27368	41943
46		1232	38098	61233	1092	33068	51905	1046	31442	48966	999	29839	46108	953	28260	43333
1 2 5 0 0		0	1178	14076	21365	1039	12307	18315	992	11724	17342	946	11145	16390	900	10570
	5	1174	14704	22627	1035	12846	19366	988	12234	18326	942	11626	17309	895	11021	16315
	10	1174	15657	24356	1035	13671	20820	988	13018	19694	942	12369	18593	895	11724	17517
	15	1177	16955	26604	1038	14801	22723	992	14093	21486	945	13390	20279	899	12692	19100
	20	1180	18483	29250	1041	16128	24957	995	15355	23591	948	14587	22257	902	13826	20955
	25	1184	20308	32402	1044	17707	27612	998	16855	26091	951	16010	24605	905	15172	23156
	30	1186	22522	36219	1047	19620	30823	1001	18671	29111	954	17730	27440	908	16798	25812
	35	1193	25135	40653	1054	21881	34560	1008	20819	32629	961	19767	30747	915	18727	28914
	40	1201	28398	46151	1062	24699	39188	1016	23495	36985	969	22304	34840	923	21127	32751
	45	1210	32645	53297	1070	28349	45177	1024	26956	42615	978	25580	40122	931	24221	37696
	46	1211	33652	54988	1072	29213	46591	1026	27774	43943	979	26353	41366	933	24951	38861
	1 2 0 0	0	1188	12970	19640	1049	11360	16875	1002	10828	15990	956	10300	15126	909	9775
5		1183	13509	20752	1044	11822	17801	998	11267	16860	951	10714	15939	905	10165	15039
10		1170	14397	22507	1031	12574	19249	985	11974	18210	938	11377	17195	892	10785	16204
15		1163	15603	24729	1023	13605	21098	977	12949	19943	931	12297	18815	884	11648	17711
20		1166	16944	27097	1026	14769	23096	980	14055	21823	934	13347	20582	887	12642	19368
25		1169	18531	29896	1029	16144	25454	983	15361	24042	936	14584	22664	890	13813	21320
30		1171	20437	33254	1032	17792	28278	986	16926	26698	939	16066	25156	893	15214	23654
35		1174	22727	37265	1035	19766	31643	988	18797	29860	942	17838	28122	895	16887	26428
40		1181	25510	42075	1042	22169	35687	995	21078	33664	949	19999	31694	902	18931	29775
45		1189	29050	48181	1050	25217	40807	1003	23969	38476	957	22737	36209	910	21519	34003
46		1190	29880	49610	1051	25930	42004	1005	24646	39601	958	23376	37263	912	22123	34989
1 5 0 0		0	1198	11979	18073	1059	10509	15564	1013	10024	14762	966	9541	13977	920	9061
	5	1194	12445	19060	1055	10911	16388	1008	10404	15534	962	9900	14699	915	9398	13881
	10	1180	13205	20606	1041	11554	17663	995	11010	16724	948	10468	15806	902	9930	14909
	15	1160	14296	22767	1021	12471	19437	974	11869	18375	928	11272	17339	882	10679	16327
	20	1151	15540	25111	1011	13530	21381	965	12869	20194	918	12212	19035	872	11561	17905
	25	1153	16924	27604	1014	14729	23479	967	14008	22167	921	13292	20887	875	12582	19640
	30	1156	18574	30573	1016	16155	25973	970	15362	24513	923	14574	23087	877	13793	21698
	35	1158	20535	34086	1019	17847	28920	972	16966	27281	926	16093	25684	879	15227	24126
	40	1160	22965	38427	1021	19935	32551	975	18945	30690	928	17964	28876	882	16993	27111
	45	1168	25951	43708	1028	22507	36976	982	21385	34849	935	20274	32777	889	19175	30760
	46	1169	26642	44928	1030	23102	37998	983	21948	35808	937	20807	33676	891	19679	31602
	1 1 0 0	0	1209	11084	16644	1070	9740	14368	1024	9297	13640	977	8854	12926	931	8414
5		1204	11489	17524	1065	10089	15101	1019	9627	14328	972	9166	13569	926	8708	12827
10		1190	12144	18893	1051	10643	16231	1005	10149	15383	958	9656	14551	912	9166	13739
15		1170	13073	20791	1031	11425	17790	984	10881	16833	938	10341	15898	891	9803	14984
20		1149	14183	23029	1010	12355	19622	963	11753	18538	917	11155	17480	870	10560	16446
25		1137	15467	25505	998	13444	21668	951	12778	20448	905	12118	19258	859	11462	18098
30		1139	16899	28139	1000	14682	23879	954	13954	22527	907	13230	21206	861	12513	19920
35		1141	18589	31233	1002	16138	26471	956	15335	24961	909	14537	23488	863	13746	22052
40		1143	20657	35015	1004	17917	29634	958	17020	27929	911	16130	26267	865	15249	24649
45		1145	23257	39768	1006	20145	33595	960	19129	31643	913	18122	29742	867	17126	27892
46		1147	23838	40819	1008	20645	34475	961	19602	32468	915	18670	30515	868	17548	28614

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	0	1288	27435	39391	1149	24110	33943	1102	23024	32208	1056	21950	30512	1009	20887	28856
	5	1298	29256	42219	1159	25713	36373	1112	24557	34512	1066	23415	32696	1020	22285	30922
	10	1308	32528	47078	1169	28568	40523	1123	27280	38441	1076	26006	36407	1030	24749	34424
	15	1318	36658	53171	1179	32156	45709	1133	30696	43343	1086	29254	41035	1040	27833	38786
	20	1328	42011	61026	1189	36782	52365	1143	35093	49627	1096	33428	46959	1050	31789	44363
	25	1338	49208	71496	1199	42961	61189	1152	40952	57941	1106	38978	54783	1060	37039	51715
	30	1348	59177	85809	1209	51443	73164	1162	48973	69199	1116	46554	65353	1069	44184	61623
	35	1358	73942	106626	1218	63846	90397	1172	60653	85344	1125	57541	80460	1079	54508	75741
	40	1367	98610	140475	1228	84149	117946	1181	79651	111018	1135	75301	104359	1089	71093	97960
	44	1371	113864	301014	1232	96449	134271	1185	91087	126148	1139	85926	118370	1092	80954	110919
1 5 0 0	-5	1267	24644	35452	1128	21643	30532	1082	20662	28964	1035	19690	27431	989	18728	25933
	0	1278	26131	37788	1139	22956	32543	1092	21918	30872	1046	20892	29240	999	19875	27644
	5	1288	27811	40429	1149	24436	34813	1102	23334	33024	1056	22245	31279	1009	21166	29573
	10	1298	30809	44932	1159	27054	38659	1112	25831	36666	1066	24622	34719	1020	23428	32821
	15	1308	34561	50535	1169	30318	43431	1122	28940	41178	1076	27580	38980	1029	26236	36836
	20	1318	39374	57691	1179	34486	49502	1132	32902	46909	1086	31343	44385	1039	29804	41924
	25	1328	45759	67110	1188	39979	57451	1142	38116	54403	1095	36284	51439	1049	34482	48556
	30	1337	54446	79775	1198	47396	68073	1152	45138	64397	1105	42922	60827	1059	40750	57363
	35	1347	66994	97773	1208	57990	83029	1161	55130	78425	1115	52337	73969	1068	49607	69655
	40	1356	87115	125963	1217	74692	106126	1171	70799	99993	1124	67021	94085	1078	63354	88393
1 5 0 0	-5	1252	22794	33158	1112	20004	28528	1066	19091	27052	1020	18186	25609	973	17289	24198
	0	1261	24122	35300	1122	21176	30368	1075	20212	28796	1029	19258	27261	982	18311	25759
	5	1271	25597	37665	1132	22477	32400	1085	21457	30724	1039	20448	29087	992	19447	27486
	10	1281	28198	41648	1141	24751	35804	1095	23627	33946	1049	22515	32132	1002	21414	30360
	15	1291	31413	46547	1151	27553	39979	1105	26297	37894	1058	25055	35859	1012	23829	33875
	20	1300	35474	52716	1161	31078	45219	1115	29652	42844	1068	28244	40529	1022	26854	38271
	25	1310	40755	60689	1171	35637	51961	1124	33982	49202	1078	32353	46518	1031	30746	43903
	30	1319	47760	71159	1180	41646	60770	1134	39679	57497	1087	37745	54316	1041	35845	51226
	35	1329	57528	85561	1189	49949	72796	1143	47528	68796	1097	45155	64915	1050	42830	61153
	40	1338	72354	107015	1199	62390	90521	1152	59237	85387	1106	56165	80428	1060	53169	75637
1 5 0 0	-5	1239	21063	30940	1099	18476	26601	1053	17629	25218	1007	16788	23865	960	15954	22542
	0	1246	22257	32922	1107	19528	28299	1060	18633	26824	1014	17747	25384	967	16868	23976
	5	1253	23594	35139	1114	20702	30194	1068	19756	28620	1021	18818	27081	975	17889	25578
	10	1263	25862	38680	1124	22687	33220	1077	21650	31483	1031	20623	29787	985	19607	28131
	15	1273	28634	42991	1133	25105	36894	1087	23956	34958	1041	22819	33069	994	21693	31224
	20	1282	32088	48352	1143	28110	41451	1097	26817	39264	1050	25538	37129	1004	24275	35048
	25	1292	36502	55169	1152	31930	47224	1106	30448	44710	1060	28987	42261	1013	27544	39875
	30	1301	42235	63948	1162	36867	54627	1115	35132	51684	1069	33426	48823	1023	31746	46040
	35	1310	50002	75706	1171	43504	64841	1125	41418	60953	1078	39368	57525	1032	37357	54200
	40	1320	61293	92544	1180	53054	78473	1134	50430	74076	1087	47862	69816	1041	45350	65692
1 4 0 0	-5	1226	19484	28898	1086	17081	24827	1040	16293	23528	993	15510	22258	947	14734	21017
	0	1233	20538	30682	1093	18009	26353	1047	17180	24973	1001	16358	23625	954	15542	22307
	5	1240	21716	32677	1100	19044	28058	1054	18170	26588	1007	17301	25149	961	16442	23746
	10	1245	23759	35981	1106	20826	30867	1059	19866	29239	1013	18916	27651	967	17974	26099
	15	1255	26161	39793	1115	22924	34116	1069	21867	32312	1022	20821	30552	976	19785	28833
	20	1264	29119	44482	1125	25501	38105	1078	24321	36080	1032	23156	34107	985	22002	32180
	25	1273	32841	50362	1134	28729	43088	1088	27393	40784	1041	26073	38538	995	24770	36350
	30	1282	37590	57809	1143	32830	49377	1097	31288	46712	1050	29768	44118	1004	28269	41593
	35	1292	43874	67567	1152	38222	57576	1106	36400	54429	1059	34607	51369	1013	32843	48396
	40	1301	52693	81100	1161	45727	68870	1115	43496	65034	1069	41307	61314	1022	39159	57705
1 4 0 0	-5	1212	18037	27009	1073	15801	23184	1027	15067	21964	980	14338	20771	934	13614	19605
	0	1219	18970	28619	1080	16624	24562	1033	15853	23268	987	15089	22004	941	14331	20769
	5	1226	20008	30412	1087	17537	26095	1040	16725	24717	994	15922	23374	947	15123	22059
	10	1230	21803	33381	1091	19101	28615	1045	18216	27097	998	17338	25615	952	16468	24168
	15	1236	23947	36898	1097	20967	31599	1050	19992	29913	1004	19027	28269	958	18071	26664
	20	1245	26495	41024	1106	23189	35108	1060	22110	33230	1013	21041	31396	967	19984	29608
	25	1254	29657	46132	1115	25937	39441	1069	24725	37319	1022	23527	35250	976	22343	33234
	30	1263	33632	52512	1124	29376	44833	1078	27995	42404	1031	26630	40037	985	25283	37732
	35	1272	38786	60716	1133	33814	51740	1087	32206	48908	1040	30620	46151	994	29058	43471
	40	1281	45814	71800	1142	39824	61019	1096	37896	57628	1049	35999	54334	1003	34136	51137
1 4 0 0	-5	1288	53590	83923	1149	46418	71098	1103	44123	67080	1056	41872	63185	1010	39665	59411



Figure 4-23 (Sheet 11 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-5	1199	16707	25255	1059	14623	21659	1013	13938	20511	967	13258	19390	920	12582	18293
	0	1205	17534	26711	1066	15353	22904	1020	14637	21691	973	13925	20504	927	13219	19345
	5	1212	18451	28328	1073	16161	24285	1026	15408	22996	980	14662	21738	933	13920	20507
	10	1216	20025	30981	1077	17532	26536	1031	16715	25121	984	15904	23739	938	15099	22388
	15	1220	21905	34143	1081	19167	29215	1035	18271	27648	988	17382	26117	942	16501	24623
	20	1226	24158	37907	1087	21126	32404	1041	20135	30656	994	19153	28949	948	18181	27286
	25	1235	26863	42375	1096	23479	36193	1050	22376	34233	1003	21283	32320	957	20202	30455
	30	1244	30218	47885	1105	26388	40854	1058	25141	38627	1012	23909	36457	966	22692	34344
	35	1253	34496	54862	1114	30080	46734	1067	28647	44165	1021	27234	41665	974	25838	39232
	40	1262	40188	64078	1122	34965	54466	1076	33277	51436	1030	31616	48492	983	29979	45631
	44	1269	46303	73894	1129	40178	62654	1083	38208	59123	1036	36271	55695	990	34369	52371
	48	1275	52800	84800	1135	45900	72400	1089	43700	67400	1041	41000	63000	996	39800	59400
1 3 5 0 0	-5	1185	15478	23619	1046	13535	20236	999	12895	19156	953	12260	18102	906	11628	17069
	0	1192	16216	24941	1052	14185	21365	1006	13517	20225	959	12853	19110	913	12195	18022
	5	1198	17027	26401	1059	14901	22613	1012	14201	21404	966	13507	20225	919	12817	19071
	10	1202	18410	28778	1063	16106	24628	1016	15349	23306	970	14599	22016	924	13854	20755
	15	1206	20050	31592	1067	17533	27011	1020	16707	25553	974	15888	24130	927	15076	22740
	20	1210	22023	34979	1070	19244	29872	1024	18335	28249	978	17434	26666	931	16540	25121
	25	1216	24391	39009	1076	21300	33280	1030	20290	31462	984	19290	29688	937	18299	27959
	30	1224	27243	43802	1085	23776	37335	1039	22646	35286	992	21527	33287	946	20421	31341
	35	1233	30827	49787	1094	26876	42384	1047	25590	40040	1001	24321	37760	955	23067	35540
	40	1242	35499	57548	1102	30896	48903	1056	29404	46174	1009	27932	43519	963	26482	40940
	44	1248	40395	65630	1109	35087	55661	1063	33373	52523	1016	31684	49473	970	30023	46513
	48	1254	46400	75400	1115	40000	64000	1069	38000	59000	1022	36000	55000	976	35000	52000
1 2 5 0 0	-5	1183	14280	21880	1043	12491	18756	997	11902	17760	951	11317	16786	904	10734	15832
	0	1178	14998	23289	1038	13106	19930	992	12484	18860	945	11864	17811	899	11250	16789
	5	1184	15719	24612	1044	13741	21058	998	13091	19926	952	12445	18820	905	11802	17738
	10	1188	16938	26748	1048	14804	22869	1002	14103	21633	956	13408	20428	909	12716	19249
	15	1191	18371	29258	1052	16052	24994	1006	15291	23637	959	14535	22311	913	13785	21018
	20	1195	20083	32259	1056	17538	27528	1009	16703	26023	963	15876	24556	916	15055	23123
	25	1198	22151	35882	1059	19329	30582	1012	18404	28898	966	17489	27256	920	16583	25657
	30	1204	24627	40164	1065	21474	34194	1019	20445	32302	972	19424	30456	926	18415	28658
	35	1213	27655	45340	1073	24096	38561	1027	22936	36415	981	21790	34325	934	20655	32289
	40	1221	31531	51942	1082	27439	44112	1035	26109	41638	989	24796	39230	943	23500	36889
	44	1228	35510	58690	1088	30854	49763	1042	29346	46948	996	27859	44212	949	26392	41552
	48	1234	40000	66000	1094	34000	55000	1048	33000	52000	1002	31000	48000	955	30000	45000
1 2 5 0 0	-5	1192	13145	20096	1053	11518	17265	1007	10982	16362	960	10448	15477	914	9918	14613
	0	1186	13764	21353	1047	12048	18312	1000	11482	17341	954	10920	16392	908	10362	15465
	5	1179	14456	22755	1040	12639	19475	994	12041	18430	947	11446	17409	901	10855	16411
	10	1173	15589	24867	1034	13611	21239	987	12960	20083	941	12314	18955	894	11671	17852
	15	1176	16846	27114	1037	14705	23139	991	14002	21874	944	13303	20639	898	12609	19433
	20	1180	18336	29781	1040	15998	25389	994	15231	23993	948	14470	22631	901	13714	21301
	25	1183	20119	32974	1043	17542	28079	997	16699	26526	951	15862	25010	904	15031	23531
	30	1186	22277	36820	1046	19407	31313	1000	18469	29567	954	17539	27864	907	16617	26205
	35	1192	24883	41400	1053	21663	35171	1006	20610	33196	960	19569	31274	913	18538	29400
	40	1200	28129	47066	1061	24466	39936	1014	23272	37680	968	22092	35484	922	20926	33348
	44	1207	31402	52764	1067	27280	44710	1021	25942	42169	975	24620	39696	928	23314	37291
	48	1213	35000	59000	1073	30000	50000	1027	28000	46000	981	27000	44000	934	26000	41000
52	1219	39000	66000	1079	33000	57000	1033	31000	53000	987	30000	49000	940	29000	44000	
1 5 0 0	-5	1203	12131	18480	1064	10648	15914	1017	10158	15093	971	9671	14290	924	9186	13505
	0	1196	12663	19591	1057	11103	16838	1011	10589	15960	964	10077	15100	918	9568	14259
	5	1189	13254	20824	1050	11609	17863	1004	11067	16919	957	10527	15995	911	9991	15093
	10	1171	14280	22882	1032	12474	19557	985	11879	18498	939	11288	17463	892	10699	16450
	15	1161	15454	25134	1022	13475	21427	975	12823	20246	929	12177	19095	883	11534	17970
	20	1164	16755	27512	1025	14604	23432	978	13897	22135	932	13195	20868	886	12499	19633
	25	1167	18298	30338	1028	15941	25811	981	15167	24373	935	14400	22970	888	13638	21602
	30	1170	20150	33714	1030	17541	28647	984	16687	27041	938	15840	25474	891	14999	23946
	35	1172	22416	37821	1033	19495	32092	987	18540	30277	940	17593	28507	894	16656	26785
	40	1179	25183	42784	1039	21882	36258	993	20805	34194	946	19739	32183	900	18684	30226
	44	1185	27901	47640	1046	24225	40331	999	23027	38021	953	21844	35774	906	20673	33588
	48	1191	31000	54000	1052	27000	46000	1004	26000	43000	959	24000	40000	912	23000	37000
52	1197	35000	61000	1058	30000	53000	1010	29000	48000	965	27000	45000	918	26000	41000	
1 1 0 0	-5	1214	11218	17009	1074	9861	14679	1028	9414	13935	982	8968	13206	935	8524	12492
	0	1207	11678	17996	1068	10257	15503	1021	9787	14706	975	9320	13926	928	8855	13163
	5	1200	12186	19086	1060	10691	16409	1014	10199	15556	968	9708	14720	921	9220	13903
	10	1181	13060	20895	1041	11428	17897	995	10890	16942	949	10356	16009	902	9823	15096
	15	1161	14100	23023	1022	12303	19646	975	11711	18570	929	11123	17521	883	10538	16495
	20	1148	15319	25432	1009	13336	21635	962	12683	20428	916	12035	19249	869	11391	18100
	25	1150	16660	27942	1011	14497	23746	965	13787	22414	918	13081	21113	872	12380	19845
	30	1153	18257	30919	1014	15878	26247	967	15096	24762	921	14322	23317	874	13552	21906
	35	1155	20192	34508	1016	17546	29254	970	16679	27589	923	15819	25965	877	14967	24384
	40	1157	22588	38944	1018	19606	32963	972	18631	31070	925	17664	29224	879		

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-5	1299	28316	40908	1159	24899	35261	1113	23785	33464	1067	22683	31709	1020	21592	29994
	0	1309	30243	43891	1170	26596	37827	1124	25408	35898	1077	24233	34015	1031	23071	32176
	5	1320	32828	47824	1180	28860	41196	1134	27569	39090	1088	26295	37037	1041	25034	35031
	10	1330	36659	53528	1191	32196	46062	1144	30747	43693	1098	29318	41384	1051	27908	39133
	15	1340	41551	60761	1201	36435	52206	1155	34780	49499	1108	33149	46861	1062	31544	44295
	20	1350	48274	70637	1211	42221	60549	1165	40273	57367	1118	38358	54274	1072	36475	51265
	25	1360	57605	84178	1221	50187	71910	1175	47814	68059	1128	45487	64320	1082	43208	60694
	30	1370	71153	103520	1231	61615	87981	1185	58592	83135	1138	55641	78445	1092	52762	73911
	35	1380	93050	134029	1241	79754	112951	1195	75602	106448	1148	71576	100187	1102	67674	94161
	40	1386	114059	289053	1247	96782	135800	1200	91458	127657	1154	86334	119859	1108	81396	112386
1 6 0 0	40	1390	134198	430487	1251	112767	312354	1204	106251	282204	1158	100015	255396	1112	94042	231413
	-5	1288	26941	39207	1149	23684	33778	1103	22621	32050	1056	21567	30359	1010	20526	28711
	0	1299	28716	41988	1160	25248	36169	1113	24116	34318	1067	22997	32510	1020	21890	30744
	5	1309	31082	45632	1170	27323	39294	1124	26099	37279	1077	24888	35312	1031	23691	33392
	10	1320	34563	50879	1180	30356	43770	1134	28990	41515	1087	27640	39314	1041	26308	37169
	15	1330	38965	57473	1190	34177	49376	1144	32626	46813	1098	31098	44316	1051	29590	41882
	20	1340	44939	66373	1200	39330	56906	1154	37522	53918	1108	35742	51010	1061	33990	48180
	25	1350	53086	78381	1210	46307	67003	1164	44133	63425	1118	42000	59951	1071	39904	56575
	30	1360	64644	95171	1220	56104	81003	1174	53986	76573	1127	50728	72281	1081	48130	68125
	35	1369	82650	120779	1230	71134	102086	1184	67514	96294	1137	63993	90704	1091	60570	85313
1 5 0 0	40	1379	114364	308175	1240	96942	237067	1193	91577	128898	1147	86414	120970	1101	81441	113376
	42	1383	135083	487130	1244	113358	343151	1197	106758	307756	1151	100446	276717	1104	94402	249280
	-5	1271	24831	36576	1132	21815	31479	1086	20829	29856	1039	19851	28269	993	18884	26719
	0	1282	26384	39058	1142	23184	33614	1096	22140	31882	1050	21106	30190	1003	20081	28536
	5	1292	28437	42285	1153	24988	36381	1106	23862	34503	1060	22749	32670	1013	21647	30881
	10	1302	31419	46873	1163	27592	40300	1116	26346	38212	1070	25115	36175	1023	23898	34188
	15	1312	35137	52564	1173	30827	45145	1126	29427	42792	1080	28046	40500	1033	26681	38264
	20	1322	40089	60116	1183	35113	51546	1136	33502	48835	1090	31916	46196	1043	30351	43626
	25	1332	46674	70072	1192	40776	59940	1146	38877	56747	1099	37008	53641	1053	35172	50624
	30	1341	55720	83582	1202	48494	71258	1156	46181	67391	1109	43912	63637	1063	41689	59997
1 5 0 0	35	1351	69127	103271	1212	59797	87591	1165	56836	82701	1119	53948	77973	1072	51126	73398
	40	1360	90871	134327	1221	77796	112969	1175	73709	106380	1128	69747	100039	1082	65905	93937
	42	1364	103933	277068	1225	88415	127621	1179	83607	119987	1132	78965	112662	1086	74482	105634
	-5	1255	22891	34103	1116	20098	29323	1070	19184	27801	1023	18277	26312	977	17379	24859
	0	1264	24282	36391	1125	21322	31285	1078	20354	29660	1032	19395	28072	985	18444	26520
	5	1274	26071	39260	1135	22896	33747	1088	21858	31993	1042	20831	30280	996	19814	28607
	10	1284	28642	43298	1145	25144	37196	1098	24003	35257	1052	22875	33365	1005	21758	31518
	15	1294	31807	48248	1154	27902	41413	1108	26632	39245	1062	25378	37131	1015	24137	35068
	20	1303	35953	54720	1164	31501	46906	1118	30057	44433	1071	28631	42022	1025	27225	39674
	25	1313	41351	63086	1174	36160	53976	1127	34482	51099	1081	32830	48299	1035	31202	45575
1 4 0 0	30	1323	48576	74168	1183	42354	63289	1137	40353	59866	1091	38388	56541	1044	36455	53310
	35	1332	58867	89743	1193	51095	76279	1146	48613	72063	1100	46183	67978	1054	43804	64020
	40	1342	74570	112986	1202	64249	95447	1156	60990	89998	1109	57814	84736	1063	54720	79657
	42	1345	83457	125892	1206	71600	105979	1160	67878	99820	1113	64261	93883	1067	60747	88164
	-5	1242	21094	31744	1103	18511	27276	1056	17663	25851	1010	16824	24460	963	15991	23100
	0	1249	22334	33843	1110	19601	29072	1063	18705	27551	1017	17818	26067	970	16938	24616
	5	1256	23944	36512	1117	21011	31350	1070	20051	29706	1024	19101	28102	977	18158	26535
	10	1266	26172	40084	1126	22961	34401	1080	21913	32595	1034	20876	30832	987	19848	29111
	15	1275	28883	44417	1136	25329	38095	1090	24171	36089	1043	23024	34129	997	21891	32220
	20	1285	32387	50013	1146	28376	42848	1099	27071	40576	1053	25783	38363	1006	24509	36205
1 4 0 0	25	1294	36862	57121	1155	32249	48863	1109	30754	46252	1062	29279	43709	1016	27825	41234
	30	1304	42727	66352	1164	37297	56640	1118	35544	53577	1072	33819	50600	1025	32120	47704
	35	1313	50817	78950	1174	44207	67187	1127	42085	63492	1081	40003	59907	1034	37958	56428
	40	1322	62587	96957	1183	54154	82133	1137	51470	77504	1090	48845	73024	1044	46278	68689
	42	1326	68963	106567	1187	59491	90046	1140	56488	84902	1094	53560	79934	1047	50700	75130
	-5	1228	19458	29576	1089	17065	25394	1043	16280	24061	996	15500	22758	950	14727	21485
	0	1235	20549	31460	1096	18024	27004	1049	17196	25585	1003	16375	24198	956	15560	22843
	5	1241	21967	33870	1102	19266	29059	1055	18381	27527	1009	17504	26031	962	16633	24569
	10	1247	23959	37173	1108	21004	31868	1061	20036	30179	1015	19079	28533	968	18130	26925
	15	1256	26295	40989	1117	23045	35119	1071	21985	33256	1024	20934	31436	978	19894	29662
1 4 0 0	20	1266	29277	45860	1127	25643	39260	1080	24458	37165	1034	23287	35124	987	22129	33134
	25	1275	33025	51958	1136	28894	44426	1089	27551	42040	1043	26225	39716	997	24916	37454
	30	1284	37849	59744	1145	33059	50996	1099	31508	48233	1052	29978	45544	1006	28470	42928
	35	1294	44330	70117	1154	38618	59703	1108	36778	56426	1061	34966	53240	1015	33185	50146
	40	1303	53406	84440	1163	46339	71645	1117	44076	67636	1070	41856	63747	1024	39680	59980
	42	1306	58158	91852	1167	50351	77787	1121	47860	73390	1074	45420	69131	1028	43031	65007

Figure 4-23 (Sheet 13 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-5	1215	17966	27579	1075	15743	23657	1029	15014	22408	982	14289	21186	936	13570	19993
	0	1221	18927	29272	1082	16590	25106	1035	15822	23778	989	15061	22481	942	14305	21213
	5	1227	20169	31427	1087	17678	26941	1041	16861	25513	995	16051	24119	948	15246	22755
	10	1231	21916	34399	1092	19201	29464	1046	18312	27894	999	17430	26361	953	16556	24865
	15	1237	23989	37897	1098	21006	32433	1052	20032	30698	1005	19065	29003	959	18108	27350
	20	1246	26542	42163	1107	23233	36060	1061	22153	34123	1014	21083	32232	968	20026	30391
	25	1256	29707	47437	1116	25982	40528	1070	24770	38340	1024	23572	36208	977	22386	34129
	30	1265	33720	54075	1125	29455	46136	1079	28071	43626	1033	26704	41182	986	25355	38804
	35	1274	38990	62737	1134	33992	53422	1088	32376	50485	1042	30784	47630	995	29214	44852
	40	1283	46146	74368	1143	40110	63151	1097	38168	59626	1050	36258	56203	1004	34382	52883
	42	1286	49791	80239	1147	43208	68038	1100	41095	64210	1054	39021	60498	1008	36985	56899
	1	1201	16596	25726	1061	14530	22048	1015	13851	20876	968	13176	19729	922	12507	18610
1 3 0 0	0	1207	17446	27254	1067	15278	23353	1021	14567	22111	975	13860	20897	928	13157	19709
	5	1212	18537	29186	1073	16236	24999	1027	15480	23666	980	14730	22363	934	13986	21092
	10	1217	20061	31832	1077	17563	27242	1031	16745	25783	985	15933	24358	938	15127	22966
	15	1221	21873	34973	1082	19141	29904	1035	18245	28292	989	17359	26720	942	16479	25185
	20	1227	24119	38847	1087	21092	33183	1041	20104	31386	995	19124	29632	948	18153	27922
	25	1236	26808	43436	1096	23433	37074	1050	22332	35058	1004	21243	33092	957	20164	31175
	30	1245	30177	49145	1105	26354	41901	1059	25110	39608	1012	23880	37374	966	22665	35200
	35	1253	34518	56466	1114	30101	48067	1068	28668	45414	1021	27254	42833	975	25858	40322
	40	1262	40260	66067	1123	35029	56115	1076	33338	52980	1030	31674	49935	984	30035	46978
	42	1266	43121	70817	1126	37471	60080	1080	35650	56704	1033	33858	53426	987	32095	50243
	1	1186	15334	24002	1047	13412	20550	1001	12780	19450	954	12151	18374	908	11527	17324
	2	1192	16087	25383	1053	14076	21730	1007	13415	20566	960	12757	19428	914	12104	18316
	5	1198	17051	27123	1058	14919	23208	1012	14220	21963	966	13525	20746	919	12834	19557
1 2 5 0 0	10	1202	18382	29483	1063	16082	25212	1016	15326	23851	970	14577	22525	923	13832	21228
	15	1206	19954	32267	1067	17450	27568	1020	16628	26074	974	15814	24616	927	15005	23192
	20	1210	21910	35736	1070	19147	30498	1024	18242	28834	978	17346	27211	931	16457	25629
	25	1215	24254	39864	1076	21182	33986	1030	20179	32123	983	19184	30305	937	18199	28533
	30	1224	27105	44811	1085	23657	38169	1038	22532	36065	992	21420	34016	946	20320	32020
	35	1233	30718	51060	1093	26781	43435	1047	25501	41025	1001	24236	38679	954	22986	36395
	40	1241	35391	59091	1102	30804	50179	1056	29317	47367	1009	27850	44633	963	26403	41976
	42	1245	37677	63000	1105	32762	53447	1059	31173	50439	1013	29606	47515	966	28061	44673
	1	1191	14076	22054	1052	12327	18912	1005	11750	17909	959	11177	16928	912	10607	15970
	2	1182	14811	23555	1043	12952	20155	997	12341	19073	950	11732	18014	904	11128	16980
	5	1183	15689	25211	1044	13714	21551	997	13064	20386	951	12419	19247	904	11777	18135
	10	1187	16857	27325	1048	14733	23342	1001	14035	22075	955	13342	20838	908	12653	19629
1 5 0 0	15	1191	18226	29801	1051	15924	25437	1005	15169	24050	958	14419	22696	912	13675	21374
	20	1194	19912	32860	1055	17390	28022	1008	16562	26484	962	15742	24985	916	14928	23521
	25	1197	21944	36544	1058	19150	31126	1012	18235	29407	965	17328	27730	919	16430	26096
	30	1203	24415	40964	1064	21290	34851	1017	20268	32913	971	19257	31026	925	18256	29187
	35	1212	27449	46342	1072	23916	39384	1026	22765	37183	979	21625	35038	933	20500	32953
	40	1220	31297	53134	1081	27236	45092	1034	25916	42552	988	24612	40081	941	23324	37678
	42	1223	33150	56394	1084	28828	47822	1038	27426	45118	991	26041	42488	945	24675	39933
	1	1201	12933	20212	1062	11346	17371	1015	10822	16463	969	10301	15576	923	9783	14709
	0	1192	13557	21528	1053	11877	18462	1007	11324	17485	960	10773	16529	914	10225	15595
	5	1180	14372	23209	1041	12567	19850	994	11972	18780	948	11382	17735	901	10794	16714
	10	1171	15464	25331	1032	13501	21617	986	12855	20435	939	12213	19280	893	11576	18154
	15	1175	16660	27541	1036	14542	23486	989	13845	22195	943	13154	20936	896	12467	19707
	20	1178	18121	30252	1039	15811	25773	993	15053	24350	946	14299	22960	900	13553	21607
1 1 0 0	25	1181	19865	33488	1042	17322	28498	996	16488	26914	949	15661	25370	903	14841	23864
	30	1184	22000	37421	1045	19167	31804	999	18240	30023	952	17321	28287	906	16410	26596
	35	1190	24607	42182	1050	21419	35806	1004	20378	33787	958	19348	31822	911	18327	29907
	40	1198	27808	47982	1059	24185	40681	1012	23004	38373	966	21837	36128	919	20682	33942
	42	1201	29328	50730	1062	25494	42985	1016	24247	40540	969	23013	38159	923	21795	35846
	1	1212	11914	18548	1072	10468	15976	1026	9991	15154	980	9517	14351	933	9044	13564
	0	1203	12447	19709	1063	10923	16940	1017	10420	16056	970	9920	15192	924	9422	14346
	5	1190	13138	21182	1051	11509	18158	1004	10971	17193	958	10437	16251	911	9905	15329
	10	1172	14108	23196	1032	12325	19813	986	11738	18737	940	11155	17686	893	10575	16659
	15	1159	15238	25468	1019	13283	21692	973	12640	20491	926	12001	19319	880	11366	18175
	20	1162	16509	27879	1022	14386	23723	976	13689	22403	929	12996	21115	883	12309	19859
	25	1164	18011	30733	1025	15689	26127	979	14927	24665	932	14170	23238	886	13419	21847
	30	1167	19837	34176	1028	17267	29019	981	16424	27383	935	15589	25789	889	14761	24236
	35	1170	22081	38400	1030	19201	32558	984	18259	30708	937	17324	28905	891	16400	27151
	40	1175	24806	43487	1036	21551	36823	989	20488	34716	943	19436	32664	896	18394	30667
	42	1178	26067	45829	1039	22638	38786	992	21519	36560	946	20413	34395	900	19319	32289



Figure 4-23 (Sheet 14 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 0 0	-5	1320	31496	45929	1181	27711	39594	1135	26479	37581	1088	25260	35614	1042	24056	33696
	0	1331	33783	49491	1192	29719	42651	1145	28398	40480	1099	27093	38361	1053	25804	36293
	5	1342	37182	54636	1202	32684	47047	1156	31226	44642	1110	29787	42296	1063	28366	40009
	10	1352	41625	61283	1213	36543	52706	1167	34900	49992	1120	33279	47347	1074	31684	44773
	15	1363	47726	70333	1223	41807	60369	1177	39901	57225	1131	38026	54167	1084	36182	51192
	20	1373	56438	83117	1234	49265	71121	1187	46967	67351	1141	44715	63693	1095	42506	60141
	25	1383	69077	101362	1244	59966	86329	1198	57073	81635	1151	54246	77089	1105	51486	72690
	30	1393	89106	129588	1254	76644	109537	1208	72739	103335	1161	68948	97357	1115	65267	91597
	34	1402	116108	285164	1262	98599	223465	1216	93209	130978	1169	88020	123022	1123	83021	115400
	35	1404	125456	333160	1264	106064	255557	1218	100130	234260	1171	94432	214785	1125	88960	123218
	36	1406	136279	405566	1266	114620	300843	1220	108038	273357	1173	101739	248659	1127	95707	226356
	39	1410	158788	599108	1270	140800	440800	1224	116000	320000	1177	107000	280000	1131	100000	250000
1 5 0 0	-5	1292	27373	40739	1153	24068	35074	1107	22990	33273	1060	21922	31512	1014	20865	29793
	0	1303	29176	43649	1164	25657	37575	1117	24509	35644	1071	23374	33759	1024	22251	31919
	5	1313	31811	47779	1174	27964	41110	1128	26712	38992	1081	25474	36926	1035	24251	34910
	10	1324	35183	53007	1184	30903	45568	1138	29514	43211	1092	28143	40913	1045	26788	38672
	15	1334	39683	59941	1195	34809	51461	1148	33230	48777	1102	31675	46164	1055	30141	43620
	20	1344	45864	69391	1205	40139	59448	1158	38293	56311	1112	36478	53261	1065	34690	50294
	25	1354	54356	82220	1215	47406	70223	1168	45177	66453	1122	42992	62796	1075	40846	59243
	30	1364	66783	100674	1225	57923	85584	1178	55106	80871	1132	52355	76311	1085	49665	71896
	35	1374	86534	129304	1234	74363	109092	1188	70546	102840	1142	66840	96817	1095	63239	91012
	39	1381	112432	310761	1242	95427	239910	1196	90184	129948	1149	85133	121974	1103	80266	114334
	40	1383	121537	374422	1244	102702	280736	1198	96929	255695	1151	91383	233040	1105	86053	122126
	40	1385	125000	390000	1246	107000	300000	1199	100000	300000	1152	93000	240000	1106	88000	125000
1 5 0 0	-10	1264	23753	35600	1125	20864	30616	1078	19918	29028	1032	18982	27478	986	18054	25963
	-5	1275	25144	37895	1135	22094	32592	1089	21097	30905	1043	20110	29257	996	19131	27646
	0	1285	26711	40479	1146	23477	34814	1099	22420	33012	1053	21375	31253	1006	20339	29535
	5	1295	28980	44112	1156	25467	37925	1110	24322	35960	1063	23188	34041	1017	22067	32169
	10	1305	31849	48659	1166	27974	41808	1120	26713	39635	1073	25466	37514	1027	24235	35447
	15	1315	35622	54610	1176	31256	46870	1130	29839	44419	1083	28440	42030	1037	27060	39703
	20	1325	40702	62573	1186	35652	53615	1140	34018	50783	1093	32408	48028	1047	30822	45346
	25	1335	47498	73124	1196	41495	62504	1149	39561	59158	1103	37661	55907	1057	35793	52749
	30	1345	57088	87803	1206	49667	74783	1159	47293	70700	1113	44968	66743	1066	42688	62905
	35	1354	71493	109444	1215	61791	92701	1169	58719	87489	1122	55721	82450	1076	52797	77583
	40	1364	94771	143298	1225	81006	120293	1178	76714	113211	1132	72559	106404	1086	68534	99858
	40	1366	98000	150000	1227	85000	125000	1180	80000	120000	1134	76000	110000	1088	72000	105000
1 4 0 0	-10	1250	21849	33089	1111	19183	28437	1065	18310	26956	1018	17444	25508	972	16586	24094
	-5	1258	23113	35254	1118	20295	30290	1072	19373	28711	1026	18459	27167	979	17552	25659
	0	1267	24501	37606	1127	21518	32308	1081	20543	30623	1035	19577	28978	988	18619	27370
	5	1277	26465	40819	1138	23244	35061	1091	22191	33230	1045	21150	31444	998	20118	29699
	10	1287	28923	44801	1147	25394	38462	1101	24244	36450	1055	23107	34487	1008	21981	32572
	15	1297	32114	49951	1157	28176	42847	1111	26895	40595	1064	25629	38399	1018	24379	36260
	20	1306	36335	56733	1167	31839	48600	1121	30381	46027	1074	28941	43519	1028	27522	41079
	25	1316	41859	65540	1177	36606	56036	1130	34908	53036	1084	33237	50120	1037	31590	47282
	30	1326	49427	77465	1186	43090	66047	1140	41053	62457	1093	39052	58971	1047	37087	55587
	35	1335	60306	94358	1196	52321	80116	1149	49773	75662	1103	47280	71348	1056	44839	67170
	40	1344	76745	119233	1205	66071	100596	1159	62704	94813	1112	59426	89234	1066	56234	83852
	40	1346	80000	125000	1207	70000	105000	1161	67000	100000	1114	63000	95000	1068	60000	88000
1 4 0 0	-10	1237	20123	30787	1097	17657	26439	1051	16849	25054	1004	16046	23700	958	15250	22377
	-5	1244	21229	32723	1104	18631	28095	1058	17780	26622	1012	16936	25183	965	16098	23777
	0	1251	22467	34888	1111	19719	29947	1065	18820	28375	1018	17928	26839	972	17044	25339
	5	1258	24215	37839	1119	21250	32465	1072	20280	30756	1026	19320	29088	979	18368	27459
	10	1268	26333	41347	1128	23106	35462	1082	22053	33593	1036	21011	31770	989	19977	29989
	15	1277	29050	45834	1138	25480	39286	1092	24316	37208	1045	23164	35181	999	22026	33206
	20	1287	32592	51666	1148	28559	44235	1101	27247	41881	1055	25952	39588	1008	24672	37354
	25	1296	37139	59106	1157	32495	50528	1111	30990	47817	1064	29505	45178	1018	28041	42610
	30	1306	43220	68958	1167	37727	58820	1120	35953	55625	1074	34209	52520	1027	32491	49503
	35	1315	51657	82474	1176	44929	70123	1129	42770	66247	1083	40562	62488	1037	38573	58842

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-10	1223	18550	28669	1083	16265	24599	1037	15516	23304	991	14772	22037	944	14032	20798
	-5	1229	19521	30405	1090	17122	26086	1044	16335	24710	997	15553	23365	951	14778	22052
	0	1236	20604	32340	1097	18075	27740	1051	17246	26276	1004	16422	24844	958	15607	23448
	5	1242	22144	35013	1103	19421	30015	1056	18529	28425	1010	17645	26872	963	16768	25357
	10	1248	24024	38231	1109	21063	32753	1063	20095	31012	1016	19135	29313	970	18185	27656
	15	1258	26354	42168	1119	23100	36107	1072	22037	34182	1026	20985	32305	979	19944	30475
	20	1267	29348	47219	1128	25708	40397	1082	24522	38234	1035	23349	36126	989	22189	34072
	25	1277	33132	53570	1137	28990	45773	1091	27644	43306	1044	26315	40903	998	25003	38565
	30	1286	38088	61820	1147	33269	52730	1100	31708	49860	1054	30170	47070	1007	28653	44356
	35	1295	44770	72847	1156	39000	61979	1109	37140	58560	1063	35311	55239	1016	33511	52014
1 3 0 0	40	1304	53984	87800	1165	46835	74435	1118	44545	70249	1072	42301	66193	1025	40100	62263
	-10	1208	17112	26712	1069	14992	22900	1023	14296	21686	976	13603	20497	930	12917	19338
	-5	1215	17969	28276	1076	15748	24237	1029	15018	22951	983	14294	21694	937	13575	20466
	0	1222	18918	30009	1082	16583	25718	1036	15817	24352	990	15057	23018	943	14302	21715
	5	1227	20259	32387	1088	17757	27742	1041	16936	26264	995	16122	24821	948	15314	23411
	10	1232	21904	35281	1093	19192	30199	1046	18303	28583	1000	17423	27007	953	16549	25467
	15	1238	23960	38873	1099	20983	33246	1052	20009	31459	1006	19045	29716	959	18089	28015
	20	1247	26509	43277	1108	23206	36987	1061	22127	34992	1015	21061	33048	969	20005	31152
	25	1256	29685	48743	1117	25966	41618	1071	24756	39362	1024	23558	37163	978	22375	35023
	30	1265	33774	55731	1126	29505	47517	1080	28119	44922	1033	26750	42395	987	25400	39937
1 2 5 0 0	35	1274	39155	64869	1135	34137	55198	1089	32514	52149	1042	30914	49186	996	29338	46306
	40	1283	46337	76902	1144	40275	65254	1097	38324	61595	1051	36408	58047	1005	34524	54603
	-10	1194	15792	24896	1055	13822	21322	1008	13174	20183	962	12530	19070	916	11891	17983
	-5	1201	16549	26307	1061	14489	22527	1015	13813	21324	968	13140	20147	922	12472	18999
	0	1207	17384	27864	1068	15226	23859	1021	14516	22583	975	13812	21337	928	13112	20120
	5	1212	18556	29988	1073	16251	25664	1026	15494	24288	980	14744	22945	933	13998	21633
	10	1217	19983	32555	1077	17496	27841	1031	16681	26343	985	15873	24882	938	15070	23454
	15	1221	21770	35764	1082	19052	30560	1035	18162	28907	989	17280	27294	942	16404	25720
	20	1227	24004	39753	1087	20993	33934	1041	20009	32088	994	19034	30288	948	18069	28534
	25	1235	26689	44490	1096	23331	37949	1050	22235	35877	1003	21150	33856	957	20077	31889
1 0 0	30	1244	30097	50466	1105	26286	42998	1059	25045	40635	1012	23818	38334	966	22607	36095
	35	1253	34490	58136	1114	30077	49452	1067	28644	46710	1021	27232	44045	975	25838	41453
	40	1262	40196	67993	1123	34974	57709	1076	33286	54472	1030	31624	51328	983	29987	48275
	-10	1190	14515	22997	1051	12708	19705	1005	12113	18655	958	11521	17629	912	10933	16626
	-5	1186	15245	24478	1046	13334	20940	1000	12705	19813	954	12081	18713	907	11459	17637
	0	1192	15982	25882	1053	13984	22139	1006	13326	20947	960	12673	19783	913	12024	18646
	5	1197	17009	27784	1057	14882	23754	1011	14184	22473	965	13490	21221	918	12800	19998
	10	1201	18251	30067	1062	15967	25692	1015	15217	24300	969	14473	22942	923	13734	21617
	15	1205	19794	32902	1066	17311	28092	1020	16497	26564	973	15688	25071	927	14887	23616
	20	1209	21725	36448	1070	18987	31085	1023	18090	29383	977	17201	27723	931	16321	26106
1 5 0 0	25	1214	24061	40707	1075	21014	34681	1029	20018	32771	982	19030	30907	936	18054	29094
	30	1223	26925	45858	1084	23500	39033	1037	22382	36872	991	21277	34768	944	20183	32718
	35	1232	30552	52364	1092	26635	44511	1046	25362	42030	999	24103	39616	953	22860	37267
	40	1240	35155	60554	1101	30598	51383	1054	29121	48492	1008	27664	45682	962	26227	42952
	-10	1201	13309	21043	1061	11672	18069	1015	11133	17121	968	10595	16193	922	10062	15287
	-5	1193	13942	22392	1053	12211	19189	1007	11642	18170	960	11075	17172	914	10512	16198
	0	1184	14652	23897	1045	12817	20439	998	12213	19338	952	11612	18262	906	11016	17212
	5	1181	15598	25750	1042	13633	21993	995	12986	20797	949	12344	19629	903	11707	18491
	10	1185	16683	27789	1046	14581	23722	1000	13890	22428	953	13203	21164	907	12521	19932
	15	1189	18021	30303	1050	15746	25848	1004	14999	24432	957	14256	23049	911	13521	21703
1 0 0	20	1193	19679	33421	1053	17185	28479	1007	16367	26910	961	15557	25380	914	14751	23887
	25	1196	21688	37191	1057	18926	31655	1010	18021	29898	964	17125	28187	918	16237	26520
	30	1201	24162	41787	1062	21067	35524	1015	20055	33540	969	19054	31608	922	18062	29726
	35	1209	27184	47354	1070	23684	40213	1024	22543	37956	977	21414	35757	931	20298	33619
	40	1218	30947	54242	1079	26930	45998	1032	25624	43396	986	24334	40865	939	23060	38405
	-10	1211	12236	19283	1072	10750	16595	1025	10259	15737	979	9771	14898	932	9285	14077
	-5	1203	12775	20470	1063	11209	17581	1017	10693	16660	971	10180	15760	924	9668	14878
	0	1194	13375	21786	1055	11721	18674	1008	11176	17683	962	10634	16714	916	10095	15768
	5	1180	14232	23602	1040	12445	20172	994	11857	19081	948	11273	18016	901	10691	16975
	10	1169	15259	25699	1030	13320	21912	983	12681	20707	937	12047	19531	890	11416	18383
1 0 0	15	1172	16422	27935	1033	14332	23801	987	13645	22488	940	12962	21205	894	12285	19956
	20	1176	17853	30690	1036	15574	26124	990	14826	24675	944	14084	23261	897	13346	21882
	25	1179	19570	33991	1039	17061	28903	993	16239	27289	947	15424	25717	900	14614	24182
	30	1182	21689	38044	1042	18892	32307	996	17977	30490	949	17069	28718	903	16171	26994
	35	1186	24278	42971	1047	21129	36444	1001	20100	34379	954	19081	32368	908	18073	30412
	40	1194	27387	48824	1055	23815	41360	1009	22651	39003	962	21499	36709	916	20360	34478



Figure 4-23 (Sheet 16 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
8000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-15	1320	30948	45118	1181	27236	38907	1134	26027	36932	1088	24832	35004	1042	23651	33122
	-10	1331	32961	48290	1192	29010	41638	1146	27725	39524	1099	26454	37461	1053	25199	35448
	-5	1343	35366	52057	1203	31120	44870	1157	29742	42590	1110	28380	40365	1064	27036	38196
	0	1354	38275	56577	1214	33665	48739	1168	32171	46256	1121	30696	43834	1075	29242	41474
	5	1364	42429	62862	1225	37278	54098	1179	35613	51326	1132	33971	48624	1086	32355	45955
	10	1375	47604	70625	1236	41756	60689	1189	39870	57552	1143	38017	54501	1097	36194	51534
	15	1386	55837	82832	1247	48820	70978	1200	46570	67250	1154	44364	63631	1107	42199	60116
	20	1396	67668	100113	1257	58866	85418	1211	56068	80826	1164	53331	76375	1118	50658	72067
	25	1407	86154	126505	1268	74326	107198	1221	70609	101214	1175	66998	95444	1128	63487	89877
	30	1417	118838	287946	1278	100968	226644	1231	95470	135107	1185	90181	126936	1139	85089	119110
1 5 0 0	32	1421	140167	397565	1282	117892	298712	1236	111133	272356	1189	104670	248529	1143	98485	226898
	-10	1321	31199	46070	1182	27457	39709	1135	26237	37686	1089	25032	35712	1042	23840	33785
	-5	1332	33385	49544	1193	29379	42693	1146	28075	40516	1100	26788	38394	1053	25515	36322
	0	1343	36015	53690	1204	31683	46244	1157	30275	43881	1111	28887	41579	1064	27516	39334
	5	1354	39742	59409	1214	34929	51123	1168	33370	48500	1122	31834	45945	1075	30318	43454
	10	1364	44335	66404	1225	38913	57072	1179	37163	54124	1132	35439	51254	1086	33742	48461
	15	1375	51545	77264	1236	45118	66244	1189	43052	62774	1143	41024	59402	1096	39031	56125
	20	1385	61685	92339	1246	53767	78883	1200	51239	74666	1153	48764	70576	1107	46341	66613
	25	1396	77038	114709	1256	66690	97436	1210	63421	92063	1164	60236	86871	1117	57131	81854
	30	1406	102778	151145	1267	87916	127146	1220	83297	119770	1174	78834	112686	1127	74516	105878
1 5 0 0	32	1410	118679	297606	1271	100756	233162	1224	95244	214980	1178	89941	127784	1131	84835	119856
	35				1277	127307	385169	1230	119763	345146	1184	112578	310171	1138	105725	279347
	-10	1303	28528	42679	1164	25097	36756	1118	23978	34873	1071	22870	33033	1025	21774	31237
	-5	1314	30404	45731	1175	26750	39380	1128	25559	37361	1082	24382	35392	1036	23218	33470
	0	1325	32641	49342	1186	28715	42478	1139	27437	40298	1093	26175	38173	1046	24927	36099
	5	1336	35774	54264	1196	31451	46683	1150	30048	44280	1103	28662	41937	1057	27295	39655
	10	1346	39578	60203	1207	34762	51743	1160	33202	49066	1114	31664	46458	1067	30147	43918
	15	1356	45431	69251	1217	39821	59406	1171	38011	56299	1124	36229	53275	1078	34477	50337
	20	1367	53418	81467	1227	46672	69688	1181	44508	65986	1135	42384	62390	1088	40298	58899
	25	1377	64998	98889	1238	56507	84234	1191	53803	79651	1145	51159	75213	1098	48573	70916
1 5 0 0	30	1387	83130	125563	1248	71673	106226	1201	68068	100232	1155	64563	94450	1108	61154	88874
	35	1397	114140	302484	1258	96975	235982	1211	91683	133247	1165	86588	125122	1118	81677	117336
	38				1264	122114	404633	1217	114921	360746	1171	108060	322721	1124	101506	289461
	-10	1285	26145	39620	1146	22988	34090	1100	21956	32330	1053	20934	30611	1007	19923	28933
	-5	1296	27767	42320	1157	24419	36412	1110	23326	34533	1064	22245	32699	1018	21175	30910
	0	1307	29685	45490	1167	26106	39131	1121	24940	37112	1074	23786	35141	1028	22646	33220
	5	1317	32343	49764	1178	28434	42788	1131	27162	40575	1085	25905	38416	1038	24663	36312
	10	1327	35529	54860	1188	31214	47136	1142	29814	44690	1095	28431	42305	1049	27066	39981
	15	1338	40346	62497	1198	35391	53616	1152	33788	50809	1105	32207	48076	1059	30650	45416
	20	1348	46752	72568	1208	40912	62120	1162	39031	58827	1116	37181	55627	1069	35360	52515
1 4 5 0 0	25	1358	55725	86487	1218	48583	73793	1172	46297	69812	1126	44054	65948	1079	41854	62200
	30	1368	69065	106818	1228	59855	90684	1182	56933	85655	1135	54078	80789	1089	51291	76085
	35	1377	90060	137900	1238	77288	116143	1192	73291	109427	1145	69413	102961	1099	65651	96738
	38	1383	109506	309487	1244	93107	138589	1198	88040	130277	1151	83154	122310	1105	78441	114674
	-10	1267	24006	36845	1128	21091	31666	1081	20136	30017	1035	19191	28408	989	18255	26836
	-5	1278	25416	39246	1138	22336	33731	1092	21330	31978	1045	20333	30265	999	19346	28594
	0	1288	27071	42045	1149	23797	36137	1102	22727	34259	1056	21669	32426	1009	20621	30637
	5	1298	29345	45785	1159	25791	39338	1113	24633	37292	1066	23486	35294	1020	22353	33347
	10	1308	32040	50198	1169	28148	43107	1123	26881	40858	1076	25629	38665	1030	24392	36528
	15	1318	36047	56712	1179	31631	48641	1133	30199	46087	1086	28784	43598	1040	27389	41175
1 4 0 0	20	1328	41261	65134	1189	36142	55768	1143	34487	52811	1096	32856	49934	1050	31250	47136
	25	1338	48362	76477	1199	42244	65314	1152	40275	61801	1106	38340	58389	1060	36438	55076
	30	1348	58494	92442	1209	50870	78648	1162	48433	74329	1116	46047	70144	1069	43709	66089
	35	1358	73492	115540	1218	63474	97739	1172	60306	92207	1125	57217	86863	1079	54205	81702
	38	1363	86440	134983	1224	74202	113626	1178	70364	107027	1131	66638	100673	1085	63020	94554
	-10	1252	22017	34169	1113	19333	29344	1066	18453	27807	1020	17582	26308	974	16718	24843
	-5	1259	23290	36420	1120	20453	31270	1074	19525	29632	1027	18604	28032	981	17692	26470
	0	1269	24741	38939	1130	21732	33431	1083	20747	31679	1037	19773	29970	990	18807	28301
	5	1279	26697	42230	1140	23450	36249	1093	22390	34349	1047	21340	32495	1000	20301	30686
	10	1289	28993	46078	1150	25462	39538	1103	24310	37462	1057	23172	35438	1010	22045	33464
1 4 0 0	15	1299	32357	51684	1160	28393	44305	1113	27103	41967	1067	25830	39690	1020	24571	37470
	20	1309	36655	58812	1169	32121	50345	1123	30651	47669	1077	29201	45063	1030	27770	42526
	25	1318	42371	68206	1179	37053	58271	1133	35335	55138	1086	33643	52092	1040	31978	49132
	30	1328	50262	81039	1189	43810	69031	1142	41737	65259	1096	39702	61598	1049	37702	58046
	35	1337	61405	98833	1198	53258	83833	1152	50661	79147	1105	48119	74610	1059	45632	70219
	38	1343	70548	113139	1204	60928	95633	1157	57880	90187	1111	54907	84927	1065	52006	79846



Figure 4-23 (Sheet 17 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
8000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-10	1238	20211	31701	1099	17737	27205	1052	16925	25772	1006	16120	24374	959	15321	23007
	-5	1245	21320	33707	1106	18714	28921	1059	17859	27397	1013	17012	25909	966	16171	24456
	0	1252	22613	36030	1112	19849	30904	1066	18944	29274	1020	18047	27683	973	17158	26130
	5	1259	24340	39027	1120	21362	33462	1074	20389	31694	1027	19424	29968	981	18469	28285
	10	1269	26308	42404	1130	23089	36349	1084	22039	34428	1037	20997	32551	991	19968	30723
	15	1279	29155	47266	1140	25574	40486	1093	24407	38336	1047	23253	36241	1000	22111	34198
	20	1288	32733	53357	1149	28685	45653	1103	27370	43215	1056	26069	40839	1010	24786	38527
	25	1298	37400	61243	1159	32724	52316	1112	31208	49496	1066	29715	46755	1019	28240	44086
	30	1307	43668	71748	1168	38116	61150	1122	36325	57814	1075	34561	54571	1029	32827	51423
	35	1317	52199	85837	1177	45395	72921	1131	43213	68871	1085	41072	64944	1038	38971	61138
	38	1322	58929	96773	1183	51093	82000	1137	48592	77383	1090	46142	72913	1044	43744	68587
	10	1223	18573	29440	1084	16287	25242	1038	15537	23906	991	14792	22600	945	14052	21324
1 3 0 0	-5	1230	19542	31232	1091	17142	26776	1044	16353	25356	998	15572	23971	952	14797	22619
	0	1237	20666	33298	1098	18130	28540	1051	17298	27026	1005	16473	25548	958	15655	24105
	5	1242	22184	36013	1103	19457	30850	1057	18564	29209	1010	17679	27607	964	16801	26044
	10	1249	23924	39101	1110	20979	33479	1063	20015	31693	1017	19061	29951	971	18116	28252
	15	1259	26350	43346	1119	23098	37090	1073	22036	35105	1026	20985	33171	980	19945	31285
	20	1268	29354	48595	1129	25716	41546	1082	24530	39313	1036	23358	37138	989	22198	35018
	25	1277	33208	55285	1138	29059	47206	1092	27711	44652	1045	26379	42164	999	25065	39745
	30	1287	38270	64018	1147	33426	54561	1101	31859	51579	1054	30313	48679	1008	28790	45861
	35	1296	44950	75410	1156	39155	64109	1110	37289	60558	1064	35453	57109	1017	33647	53762
	38	1301	50062	84014	1162	43513	71285	1115	41409	67292	1069	39345	63423	1023	37319	59672
	10	1208	17080	27355	1069	14965	23433	1023	14270	22185	976	13579	20964	930	12894	19772
	-5	1215	17930	28963	1076	15715	24808	1030	14987	23485	983	14264	22193	937	13547	20932
	0	1222	18911	30807	1082	16577	26381	1036	15811	24974	989	15051	23599	943	14297	22257
1 2 5 0 0	5	1227	20226	33213	1088	17728	28428	1041	16909	26907	995	16097	25423	948	15290	23973
	10	1232	21740	35978	1093	19051	30777	1046	18169	29124	1000	17296	27512	954	16431	25941
	15	1238	23870	39835	1099	20906	34047	1052	19936	32209	1006	18976	30418	959	18024	28670
	20	1247	26413	44392	1108	23123	37914	1061	22049	35861	1015	20987	33861	969	19935	31911
	25	1256	29626	50120	1117	25916	42763	1070	24707	40435	1024	23513	38168	978	22332	35960
	30	1265	33765	57466	1126	29498	48960	1080	28112	46273	1033	26744	43659	987	25393	41116
	35	1274	39094	66837	1135	34085	56830	1089	32465	53679	1042	30867	50615	996	29294	47640
	38	1280	43073	73759	1140	37492	62619	1094	35692	59118	1047	33920	55718	1001	32178	52420
	10	1194	15715	25427	1054	13754	21759	1008	13109	20591	961	12468	19449	915	11831	18334
	-5	1200	16461	26871	1061	14413	22993	1014	13739	21758	968	13071	20553	922	12407	19377
	0	1206	17319	28521	1067	15169	24402	1021	14462	23091	974	13760	21811	928	13063	20561
	5	1211	18463	30662	1072	16170	26222	1026	15417	24810	979	14669	23431	933	13928	22087
1 0 0	10	1216	19770	33106	1077	17313	28297	1031	16507	26769	984	15706	25277	938	14913	23823
	15	1220	21608	36528	1081	18911	31192	1035	18029	29499	988	17152	27846	942	16284	26235
	20	1226	23828	40646	1086	20840	34673	1040	19863	32779	994	18896	30934	947	17937	29134
	25	1235	26530	45590	1095	23191	38858	1049	22102	36727	1002	21023	34650	956	19957	32629
	30	1243	29951	51832	1104	26157	44127	1058	24923	41692	1011	23702	39321	965	22496	37015
	35	1252	34264	59645	1113	29881	50699	1067	28459	47878	1020	27055	45133	974	25670	42467
	38	1257	37419	65311	1118	32593	55449	1072	31031	52343	1025	29490	49324	979	27972	46393
	10	1192	14389	23385	1052	12599	20024	1006	12010	18954	960	11425	17909	913	10842	16887
	-5	1185	15118	24937	1045	13221	21314	999	12598	20162	952	11977	19036	906	11361	17937
	0	1190	15870	26417	1051	13885	22578	1005	13232	21357	958	12582	20163	912	11938	18999
	5	1195	16868	28328	1056	14759	24201	1010	14066	22890	963	13376	21607	917	12693	20358
	10	1200	18002	30497	1061	15750	26042	1014	15010	24626	968	14276	23245	922	13547	21897
	15	1204	19581	33509	1065	17124	28589	1018	16317	27026	972	15518	25503	925	14724	24016
1 1 0 0	20	1208	21483	37138	1068	18775	31652	1022	17888	29912	976	17009	28215	929	16137	26562
	25	1212	23827	41578	1073	20807	35395	1027	19820	33437	980	18842	31528	934	17874	29670
	30	1221	26681	46929	1082	23286	39914	1035	22177	37693	989	21081	35532	942	19996	33429
	35	1230	30216	53520	1090	26342	45460	1044	25082	42915	998	23837	40439	951	22606	38031
	38	1235	32758	58227	1095	28533	49410	1049	27162	46630	1003	25808	43928	956	24471	41301
	10	1202	13155	21342	1062	11539	18315	1016	11006	17349	970	10477	16407	923	9950	15485
	-5	1194	13769	22700	1055	12064	19445	1008	11502	18408	962	10943	17394	915	10387	16404
	0	1185	14488	24270	1046	12676	20747	999	12079	19626	953	11486	18531	906	10896	17462
	5	1179	15422	26189	1039	13476	22347	993	12836	21126	946	12199	19933	900	11568	18770
	10	1183	16408	28120	1044	14338	23985	997	13657	22670	951	12982	21389	905	12311	20138
	15	1187	17770	30782	1047	15523	26324	1001	14786	24791	955	14054	23382	908	13227	22009
	20	1190	19395	33962	1051	16935	28918	1005	16129	27318	958	15328	25757	912	14534	24236
	25	1193	21392	37854	1054	18665	32194	1008	17773	30402	961	16887	28653	915	16010	26951
	30	1198	23854	42631	1058	20793	36209	1012	19793	34176	965	18802	32197	919	17821	30270
	35	1206	26780	48244	1067	23329	40935	1020	22202	38624	974	21089	36377	927	19987	34190
	38	1211	28855	52202	1072	25121	44259	1025	23904	41751	979	22703	39313	932	21514	36941

Figure 4-23 (Sheet 18 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7°
9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-20	1331	32624	47763	1192	28717	41190	1145	27445	39101	1099	26189	37063	1052	24947	35073
6	-15	1343	34701	51063	1203	30546	44030	1157	29197	41798	1110	27863	39619	1064	26547	37495
3	-10	1354	37218	55028	1215	32756	47435	1168	31308	45027	1122	29880	42679	1076	28470	40390
0	-5	1365	40183	59679	1226	35350	51417	1180	33785	48801	1133	32241	46250	1087	30719	43765
0	0	1377	43967	65530	1237	38643	56407	1191	36924	53524	1144	35230	50715	1098	33563	47982
0	5	1388	48826	72945	1248	42853	62709	1202	40929	59480	1156	39038	56339	1109	37178	53285
	10	1399	55695	83278	1259	48761	71438	1213	46538	67715	1167	44357	64099	1120	42216	60587
	15	1409	66972	99897	1270	58360	85357	1224	55620	80809	1177	52939	76401	1131	50318	72133
	20	1420	84073	124571	1281	72712	105783	1235	69136	99952	1188	65657	94324	1142	62273	88892
	25	1431	113826	265035	1292	97106	139511	1245	91942	131372	1199	86965	123568	1152	82163	116082
	28	1437	144622	412794	1298	121615	310224	1252	114647	282905	1205	107989	258217	1159	101623	235812
1	-10	1343	35065	52281	1204	30864	45056	1158	29500	42764	1111	28151	40527	1065	26821	38347
6	-5	1355	37736	56535	1215	33204	48700	1169	31734	46218	1123	30285	43798	1076	28854	41440
0	0	1366	41117	61844	1226	36154	53236	1180	34548	50512	1134	32966	47859	1087	31405	45275
0	5	1377	45419	68514	1237	39890	58913	1191	38106	55881	1145	36351	52931	1098	34621	50059
0	10	1388	51424	77698	1248	45072	66689	1202	43030	63222	1155	41024	59852	1109	39053	56577
	15	1398	61097	92209	1259	53341	78880	1213	50864	74702	1166	48437	70648	1120	46060	66718
	20	1409	75332	113173	1270	65364	96320	1223	62208	91069	1177	59132	85994	1130	56131	81087
	25	1420	98921	146942	1280	84911	123974	1234	80545	116899	1187	76317	110094	1141	72222	103548
	28	1426	121876	307316	1287	103501	241004	1240	97856	222296	1194	92429	132149	1147	87207	123988
	30	1430	144228	430470	1291	121199	321026	1244	114225	292127	1198	107564	266111	1151	101194	242576
	31				1293	132047	390286	1246	124205	350660	1200	116745	315877	1154	109638	285104
1	-10	1325	31840	48132	1186	28023	41456	1140	26781	39337	1093	25552	37267	1047	24339	35250
5	-5	1336	34097	51819	1197	30007	44620	1151	28678	42337	1104	27364	40110	1058	26067	37938
5	0	1347	36924	56372	1208	32481	48517	1162	31040	46028	1115	29617	43602	1069	28213	41238
0	5	1358	40471	62018	1219	35574	53334	1173	33988	50586	1126	32425	47910	1080	30884	45305
0	10	1369	45335	69661	1230	39789	59823	1183	37999	56718	1137	36237	53696	1090	34503	50757
	15	1379	52961	81434	1240	46345	69753	1194	44222	66080	1147	42135	62510	1101	40088	59046
	20	1390	63730	97817	1251	55518	83466	1204	52899	78974	1158	50337	74622	1111	47829	70405
	25	1400	80485	122741	1261	69589	104089	1215	66154	98298	1168	62809	92707	1122	59553	87310
	30	1411	109280	269712	1271	93223	137771	1225	88255	129670	1179	83462	121899	1132	78833	114443
	31	1413	117360	307026	1273	99736	240486	1227	94311	221709	1181	89089	129695	1134	84059	121658
	35										1189	120125	404665	1142	112667	357813
1	-10	1307	28997	44435	1168	25513	38243	1121	24376	36274	1075	23253	34355	1029	22141	32481
5	-5	1318	30920	47656	1179	27207	41010	1132	25997	38899	1086	24802	36841	1039	23619	34832
0	0	1329	33306	51597	1189	29300	44386	1143	27998	42099	1097	26711	39869	1050	25439	37695
0	5	1339	36263	56426	1200	31886	48513	1154	30465	46006	1107	29062	43563	1061	27679	41184
	10	1350	40257	62871	1211	35360	53997	1164	33774	51191	1118	32211	48459	1071	30670	45799
	15	1360	46381	72592	1221	40649	62220	1175	38802	58951	1128	36983	55771	1082	35195	52681
	20	1371	54748	85718	1231	47820	73255	1185	45600	69342	1139	43422	65545	1092	41283	61858
	25	1381	67158	104840	1242	58344	89191	1195	55541	84305	1149	52803	79578	1102	50126	75002
	30	1391	86885	134516	1252	74800	113592	1205	71007	107120	1159	67324	100884	1112	63744	94875
	35	1401	119640	361493	1262	101419	276120	1215	95821	252755	1169	90439	231419	1122	85259	125335
	36	1403	129324	443077	1264	109123	326894	1217	102956	296509	1171	97043	269254	1124	91368	244687
1	-10	1288	26475	41118	1149	23281	35354	1103	22238	33522	1056	21205	31734	1010	20182	29988
4	-5	1299	28126	43952	1160	24738	37790	1113	23632	35833	1067	22539	33923	1021	21457	32060
5	0	1310	30156	47389	1170	26523	40738	1124	25340	38628	1078	24169	36568	1031	23011	34560
0	5	1320	32647	51561	1181	28706	44306	1135	27425	42008	1088	26158	39765	1042	24906	37579
	10	1331	35966	57057	1191	31601	48990	1145	30185	46438	1098	28786	43949	1052	27406	41526
	15	1341	40958	65198	1202	35929	55893	1155	34301	52953	1109	32699	50094	1062	31118	47311
	20	1351	47592	75920	1212	41644	64936	1165	39728	61478	1119	37845	58118	1072	35992	54853
	25	1361	57069	91015	1222	49738	77580	1175	47392	73369	1129	45092	69285	1082	42837	65327
	30	1371	71284	113252	1232	61730	96019	1185	58702	90654	1139	55747	85468	1092	52863	80457
	35	1381	92871	146012	1242	79617	122793	1195	75476	115638	1149	71463	108756	1102	67571	102136
	36	1383	98818	269931	1243	84475	129935	1197	80012	122279	1151	75695	114925	1104	71516	107860
1	-10	1269	24223	38121	1130	21284	32741	1084	20323	31031	1037	19370	29360	991	18427	27730
4	-5	1280	25650	40629	1141	22546	34899	1094	21531	33077	1048	20527	31300	1001	19531	29565
0	0	1290	27391	43649	1151	24079	37489	1105	22999	35534	1058	21928	33625	1012	20870	31764
0	5	1301	29508	47282	1161	25938	40600	1115	24775	38480	1069	23624	36412	1022	22486	34397
	10	1311	32294	52015	1172	28375	44638	1125	27099	42300	1079	25839	40021	1032	24593	37801
	15	1321	36412	58912	1182	31954	50493	1135	30507	47830	1089	29080	45238	1042	27672	42714
	20	1331	41759	67808	1192	36579	58015	1145	34904	54925	1099	33254	51920	1052	31629	48998
	25	1341	49167	79988	1201	42939	68252	1155	40937	64564	1109	38969	60982	1062	37035	57506
	30	1350	59783	97213	1211	51971	82621	1165	49476	78056	1118	47033	73635	1072	44642	69356
	35	1360	74906	121179	1221	64668	102402	1174	61432	96571	1128	58279	90943	1082	55207	85513
	36	1362	78870	127366	1223	67964	107468	1176	64525	101300	1130	61180	95353	1084	57924	89619



Figure 4-23 (Sheet 19 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFFFLAPS - 7⁰
9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-10	1254	22146	35262	1114	19447	30261	1068	18564	28671	1021	17687	27117	975	16819	25601
	-5	1261	23428	37603	1122	20576	32263	1075	19642	30565	1029	18717	28908	982	17800	27291
	0	1271	24939	40292	1131	21906	34568	1085	20916	32751	1038	19934	30976	992	18962	29246
	5	1281	26750	43477	1141	23499	37295	1095	22439	35335	1049	21389	33422	1002	20348	31554
	10	1291	29107	47583	1151	25565	40802	1105	24410	38651	1059	23269	36556	1012	22138	34512
	15	1301	32538	53484	1161	28554	45816	1115	27259	43390	1068	25978	41024	1022	24714	38722
	20	1310	36906	60959	1171	32344	52148	1125	30865	49364	1078	29405	46654	1032	27966	44019
	25	1320	42807	70963	1181	37433	60579	1134	35697	57307	1088	33988	54127	1041	32305	51037
	30	1330	50963	84659	1190	44413	72048	1144	42310	68092	1098	40246	64254	1051	38217	60530
	35	1339	62035	102906	1200	53797	87213	1153	51171	82314	1107	48604	77575	1061	46091	72990
	36	1341	64834	107467	1202	56152	90981	1155	53390	85841	1109	50692	80873	1063	48054	76068
	1	1239	20261	32621	1099	17781	27972	1053	16968	26494	1006	16161	25049	960	15361	23639
3 0 0 0	-5	1246	21371	34696	1106	18758	29747	1060	17903	28174	1014	17055	26638	967	16212	25138
	0	1252	22716	37179	1113	19940	31866	1067	19031	30178	1020	18130	28530	974	17237	26923
	5	1260	24304	40061	1121	21334	34327	1075	20363	32507	1028	19400	30730	982	18447	28998
	10	1270	26313	43649	1131	23096	37391	1084	22045	35405	1038	21006	33470	992	19976	31582
	15	1280	29196	48738	1141	25613	41719	1094	24444	39494	1048	23289	37327	1001	22146	35215
	20	1289	32805	55088	1150	28751	47102	1104	27433	44576	1057	26131	42117	1011	24845	39723
	25	1299	37578	63423	1160	32881	54139	1113	31358	51209	1067	29858	48360	1020	28377	45589
	30	1308	43983	74534	1169	38388	63472	1123	36584	59993	1076	34807	56612	1030	33060	53332
	35	1318	52359	88848	1178	45536	75423	1132	43348	71217	1086	41202	67141	1039	39094	63190
	36	1320	54419	92339	1180	47284	78324	1134	45000	73938	1087	42759	69688	1041	40562	65572
	1	1223	18556	30205	1084	16274	25880	1038	15524	24503	991	14780	23159	945	14041	21846
	-5	1230	19522	32054	1091	17125	27460	1045	16338	25999	998	15557	24572	952	14783	23180
	0	1237	20685	34252	1097	18146	29335	1051	17314	27773	1005	16489	26248	958	15669	24758
5 0 0 0	5	1243	22077	36858	1103	19364	31553	1057	18476	29868	1011	17596	28224	964	16723	26621
	10	1249	23843	40124	1110	20909	34331	1063	19949	32492	1017	18999	30700	971	18057	28952
	15	1259	26283	44544	1119	23041	38090	1073	21983	36044	1027	20936	34051	980	19898	32107
	20	1268	29294	49989	1129	25664	42708	1082	24481	40403	1036	23312	38158	990	22156	35973
	25	1277	33203	57015	1138	29055	48648	1092	27707	46004	1045	26376	43431	999	25062	40928
	30	1287	38322	66177	1147	33472	56359	1101	31902	53264	1055	30355	50257	1008	28829	47335
	35	1296	44819	77667	1157	39046	65983	1110	37185	62313	1064	35356	58751	1017	33555	55294
	36	1298	46383	80415	1158	40381	68276	1112	38449	64466	1065	36550	60770	1019	34683	57185
	1	1208	17010	27987	1069	14904	23957	1022	14211	22673	976	13523	21420	930	12841	20198
	-5	1215	17853	29639	1076	15647	25368	1029	14922	24009	983	14203	22683	936	13488	21387
	0	1221	18861	31592	1082	16534	27034	1035	15769	25584	989	15011	24170	942	14258	22789
	5	1227	20061	33894	1087	17584	28992	1041	16772	27435	994	15966	25915	948	15167	24433
10 0 0 0	10	1232	21587	36798	1093	18918	31458	1046	18043	29762	1000	17176	28108	953	16316	26496
	15	1237	23721	40805	1098	20776	34851	1051	19812	32962	1005	18857	31120	959	17912	29327
	20	1246	26252	45506	1107	22983	38839	1061	21916	36727	1014	20859	34669	968	19814	32666
	25	1255	29487	51487	1116	25795	43899	1070	24592	41499	1023	23402	39161	977	22227	36888
	30	1264	33636	59143	1125	29384	50349	1079	28004	47575	1032	26640	44875	986	25295	42251
	35	1273	38777	68535	1134	33812	58235	1088	32205	54992	1041	30622	51842	995	29062	48784
	36	1275	39992	70745	1136	34855	60085	1089	33193	56730	1043	31558	53474	997	29946	50312
	1	1192	15599	25941	1053	13653	22182	1007	13012	20985	960	12375	19816	914	11743	18675
	-5	1199	16337	27421	1060	14304	23446	1013	13634	22180	967	12971	20947	920	12310	19740
	0	1205	17216	29164	1065	15076	24931	1019	14373	23585	973	13675	22271	926	12981	20989
	5	1210	18253	31204	1071	15986	26666	1024	15241	25224	978	14503	23818	932	13769	22445
	10	1215	19564	33762	1076	17132	28837	1029	16333	27272	983	15542	25747	937	14757	24261
	15	1219	21391	37289	1080	18721	31820	1034	17847	30085	987	16979	28392	941	16120	26744
15 0 0 0	20	1224	23594	41533	1085	20635	35404	1038	19666	33461	992	18708	31569	945	17757	29724
	25	1233	26296	46668	1093	22984	39747	1047	21904	37557	1001	20835	35425	954	19777	33349
	30	1242	29698	53134	1102	25934	45200	1056	24710	42695	1009	23498	40255	963	22301	37883
	35	1250	33831	60926	1111	29504	51751	1065	28100	48859	1018	26714	46048	972	25346	43316
	36	1252	34794	62736	1113	30334	53270	1066	28887	50287	1020	27460	47388	974	26051	44571
	1	1193	14224	23741	1054	12459	20321	1007	11876	19230	961	11299	18168	914	10723	17128
	-5	1185	14937	25317	1046	13067	21631	1000	12451	20457	953	11839	19312	907	11231	18195
	0	1188	15725	26941	1049	13754	23004	1002	13105	21752	956	12462	20531	909	11821	19338
	5	1193	16626	28757	1054	14545	24548	1007	13860	23210	961	13181	21906	914	12505	20632
	10	1198	17758	31021	1058	15533	26467	1012	14803	25021	966	14078	23611	919	13358	22236
	15	1202	19319	34113	1062	16892	29081	1016	16096	27485	969	15306	25928	923	14523	24411
	20	1205	21189	37819	1066	18516	32208	1020	17641	30430	973	16772	28696	927	15912	27008
	25	1209	23529	42432	1070	20543	36092	1023	19566	34084	977	18599	32129	931	17641	30226
	30	1218	26347	47946	1078	22989	40743	1032	21894	38466	986	20810	36250	939	19736	34092
	35	1226	29716	54493	1087	25905	46251	1041	24664	43649	994	23438	41119	948	22226	38660
	36	1228	30492	55998	1089	26574	47513	1042	25299	44836	996	24041	42235	949	22796	39705



Figure 4-23 (Sheet 20 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7⁰**
ANTI - ICE SYSTEMS OFF **10,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-20	1354	36785	54357	1214	32380	46866	1168	30951	44490	1122	29541	42174	1075	28148	39914
	-15	1366	39389	58481	1226	34665	50406	1180	33135	47849	1133	31626	45356	1087	30138	42926
	-10	1377	42552	63468	1238	37431	54675	1192	35775	51893	1145	34142	49182	1099	32535	46544
	-5	1389	46276	69316	1250	40674	59665	1203	38865	56615	1157	37087	53649	1110	35335	50760
	0	1400	51095	76742	1261	44847	65975	1215	42838	62582	1168	40862	59281	1122	38922	56075
	5	1412	57065	85861	1272	49988	73689	1226	47721	69864	1179	45497	66149	1133	43315	62542
	10	1423	67240	101045	1283	58663	86425	1237	55933	81852	1191	53263	77420	1144	50651	73126
	15	1434	83296	124498	1295	72170	105880	1248	68664	100098	1202	65252	94515	1155	61931	89125
	20	1445	110187	251637	1305	94317	136929	1259	89401	129059	1213	84656	121506	1166	80072	114253
	21	1447	117960	280960	1308	100612	223573	1261	95263	137088	1215	90113	128956	1168	85148	121160
1 6 0 0	23	1451	137348	370541	1312	116106	284734	1266	109637	261224	1219	103440	239739	1173	97501	220045
	-15	1355	37026	55450	1216	32593	47787	1169	31154	45357	1123	29735	42989	1076	28333	40679
	-10	1366	39860	59990	1227	35075	51677	1181	33526	49045	1134	31997	46480	1088	30490	43981
	-5	1378	43172	65277	1239	37966	56195	1192	36282	53322	1146	34625	50526	1099	32992	47804
	0	1389	47418	71932	1250	41654	61861	1203	39795	58682	1157	37968	55590	1111	36170	52583
	5	1400	52616	80015	1261	46147	68716	1215	44068	65158	1168	42026	61701	1122	40021	58342
	10	1411	61325	93256	1272	53604	79857	1226	51137	75655	1179	48720	71579	1133	46353	67627
	15	1422	74690	113191	1283	64918	96474	1237	61823	91263	1190	58802	86223	1144	55856	81350
	20	1433	96097	144287	1294	82729	122026	1248	78552	115156	1201	74503	108543	1155	70577	102177
	23	1440	116558	285472	1300	99405	226527	1254	94114	136844	1208	89018	128698	1161	84103	120888
1 5 0 0	25	1444	135866	380437	1305	114840	291021	1258	108432	266638	1212	102295	244402	1166	96409	224054
	27							1263	127916	375874	1216	120243	337721	1170	112941	304168
	-15	1337	33507	50897	1197	29497	43842	1151	28193	41604	1105	26905	39420	1058	25632	37290
	-10	1348	35885	54809	1209	31587	47200	1162	30191	44788	1116	28813	42436	1070	27453	40144
	-5	1359	38632	59317	1220	33993	51060	1174	32490	48446	1127	31006	45898	1081	29543	43417
	0	1370	42110	64921	1231	37026	55843	1185	35382	52973	1138	33762	50179	1092	32166	47460
	5	1382	46296	71623	1242	40662	61545	1196	38845	58366	1149	37056	55272	1103	35296	52263
	10	1392	53140	82345	1253	46558	70605	1207	44445	66913	1160	42368	63325	1114	40330	59842
	15	1403	63250	97933	1264	55188	83678	1218	52616	79215	1171	50098	74889	1125	47633	70696
	20	1414	78527	120999	1275	68062	102819	1228	64756	97167	1182	61536	91707	1135	58397	86434
1 5 0 0	25	1424	104236	251814	1285	89289	133534	1239	84645	125822	1192	80155	118414	1146	75813	111298
	27	1429	119980	322131	1289	102024	251844	1243	96501	232084	1197	91187	213839	1150	86070	125643
	30				1296	128464	416138	1249	120937	372696	1203	113765	334778	1156	106922	301399
	-15	1318	30424	46864	1179	26778	40342	1132	25590	38270	1086	24416	36250	1040	23254	34278
	-10	1329	32437	50264	1190	28551	43262	1144	27287	41042	1097	26037	38874	1051	24803	36763
	-5	1340	34739	54146	1201	30574	46592	1155	29221	44198	1108	27884	41863	1062	26565	39589
	0	1351	37622	58920	1212	33097	50675	1166	31629	48064	1119	30181	45521	1073	28752	43044
	5	1362	41042	64554	1223	36079	55480	1177	34473	52612	1130	32890	49819	1084	31330	47102
	10	1373	46524	73394	1234	40824	62973	1187	38986	59687	1141	37178	56492	1095	35398	53385
	15	1384	54377	85890	1244	47569	73497	1198	45386	69605	1152	43243	65826	1105	41139	62158
1 4 0 0	20	1394	65728	103650	1255	57225	88337	1209	54518	83552	1162	51869	78917	1116	49280	74432
	25	1405	83543	130867	1265	72154	110803	1219	68570	104585	1173	65085	98588	1126	61693	92804
	30	1415	113722	318548	1276	96851	248910	1229	91643	229307	1183	86626	129802	1136	81786	121790
	34				1284	130692	552169	1237	122914	481250	1191	115512	422460	1145	108460	372914
	-15	1299	27702	43263	1160	24372	37210	1114	23285	35287	1067	22208	33408	1021	21144	31577
	-10	1310	29418	46238	1171	25887	39769	1125	24735	37714	1078	23596	35709	1032	22470	33755
	-5	1321	31364	49610	1182	27601	42663	1136	26376	40460	1089	25164	38310	1043	23966	36214
	0	1332	33777	53715	1193	29718	46178	1146	28398	43790	1100	27095	41462	1054	25808	39194
	5	1343	36606	58508	1204	32193	50274	1157	30761	47668	1111	29348	45129	1064	27952	42655
	10	1353	41064	65903	1214	36066	56556	1168	34449	53603	1121	32855	50730	1075	31285	47935
1 4 0 0	15	1364	47292	76117	1225	41443	65187	1178	39558	61745	1132	37704	58399	1085	35880	55147
	20	1374	55985	90180	1235	48889	76995	1188	46615	72858	1142	44385	68846	1096	42198	64956
	25	1384	68937	110745	1245	59858	94103	1199	56975	88915	1152	54158	83896	1106	51406	79043
	30	1394	89122	142010	1255	76671	119762	1209	72768	112891	1162	68980	106275	1116	65302	99905
	34	1403	114546	369592	1263	97371	282179	1217	92077	258249	1170	86977	132746	1124	82063	124449
	-15	1280	25282	40024	1141	22227	34388	1094	21228	32596	1048	20240	30848	1002	19260	29141
	-10	1291	26755	42644	1152	23530	36643	1105	22477	34736	1059	21434	32875	1012	20402	31060
	-5	1302	28413	45594	1162	24993	39176	1116	23888	37140	1070	22775	35153	1023	21682	33215
	0	1312	30452	49155	1173	26787	42230	1127	25593	40034	1080	24412	37892	1034	23245	35804
	5	1323	32817	53274	1184	28862	45754	1137	27575	43371	1091	26304	41049	1044	25047	38786
1 4 0 0	10	1333	36490	59537	1194	32062	51082	1148	30626	48409	1101	29207	45803	1055	27808	43268
	15	1343	41511	68017	1204	36414	58265	1158	34766	55189	1111	33141	52194	1065	31541	49283
	20	1354	48326	79398	1214	42281	67853	1168	40336	64223	1122	38424	60697	1075	36543	57272
	25	1364	58073	95440	1224	50601	81273	1178	48212	76837	1132	45871	72539	1085	43575	68373
	30	1374	72368	118543	1234	62653	100404	1188	59577	94764	1142	56576	89316	1095	53646	84053
	34	1382	88984	144759	1242	76447	121845	1196	72519	114774	1149	68707	107969	1103	65008	101422

Figure 4-23 (Sheet 21 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS OFF 10.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-15	1262	23093	37032	1123	20288	31786	1076	19369	30116	1030	18460	28489	983	17557	26898
	-10	1271	24389	39411	1132	21432	33826	1086	20466	32053	1039	19507	30320	993	18558	28630
	-5	1282	25813	42009	1143	22692	36061	1096	21671	34171	1050	20662	32328	1003	19661	30530
	0	1292	27550	45123	1153	24222	38731	1107	23136	36703	1060	22061	34724	1014	20997	32795
	5	1303	29548	48695	1163	25978	41789	1117	24815	39600	1070	23663	37464	1024	22525	35384
	10	1313	32606	54052	1173	28649	46352	1127	27362	43914	1081	26091	41540	1034	24834	39226
	15	1323	36711	61186	1184	32219	52406	1137	30761	49630	1091	29323	46929	1044	27904	44301
	20	1333	42150	70554	1193	36921	60318	1147	35231	57091	1101	33567	53955	1054	31927	50906
	25	1343	49678	83375	1203	43383	71083	1157	41360	67223	1111	39373	63478	1064	37418	59841
	30	1352	60216	101087	1213	52347	85843	1167	49836	81080	1120	47376	76467	1074	44968	72004
1 3 0 0	34	1360	71793	120197	1221	62084	101623	1175	59009	95852	1128	56009	90278	1082	53082	84897
	-15	1247	21081	34194	1108	18510	29328	1061	17667	27779	1015	16832	26269	968	16002	24793
	-10	1254	22220	36352	1115	19514	31175	1069	18629	29531	1022	17749	27923	976	16879	26356
	-5	1262	23494	38766	1122	20634	33237	1076	19699	31482	1030	18773	29769	983	17853	28097
	0	1272	24990	41519	1132	21954	35599	1086	20962	33720	1040	19979	31886	993	19005	30098
	5	1282	26689	44637	1143	23451	38271	1096	22393	36251	1050	21346	34281	1003	20309	32360
	10	1292	29258	49259	1153	25699	42210	1106	24538	39976	1060	23391	37799	1013	22255	35677
	15	1302	32652	55325	1162	28655	47360	1116	27356	44841	1070	26073	42389	1023	24804	40000
	20	1311	37058	63145	1172	32478	53979	1126	30994	51085	1079	29528	48269	1033	28084	45532
	25	1321	42993	73590	1182	37597	62774	1135	35854	59368	1089	34138	56060	1043	32450	52848
1 2 5 0 0	30	1331	51006	87559	1191	44455	74463	1145	42352	70356	1099	40287	66375	1052	38259	62514
	34	1338	59444	102067	1199	51618	86523	1153	49121	81670	1106	46674	76971	1060	44279	72426
	-15	1232	19270	31610	1092	16908	27089	1046	16133	25651	999	15363	24245	953	14600	22875
	-10	1239	20257	33527	1100	17779	28729	1053	16966	27204	1007	16160	25715	960	15360	24261
	-5	1246	21353	35657	1107	18745	30551	1060	17889	28927	1014	17042	27344	967	16201	25799
	0	1253	22681	38192	1113	19909	32712	1067	19003	30974	1021	18104	29276	974	17212	27620
	5	1261	24166	41008	1121	21214	35118	1075	20249	33249	1028	19293	31426	982	18346	29649
	10	1270	26339	45022	1131	23119	38541	1085	22068	36487	1038	21027	34483	992	19997	32532
	15	1280	29171	50226	1141	25592	42964	1094	24425	40664	1048	23271	38423	1002	22131	36243
	20	1290	32785	56831	1150	28734	48558	1104	27418	45944	1058	26117	43399	1011	24832	40922
1 2 0 0	25	1299	37543	65475	1160	32852	55850	1113	31331	52814	1067	29833	49864	1021	28355	46996
	30	1309	43782	76733	1169	38217	65299	1123	36423	61705	1076	34656	58215	1030	32918	54829
	34	1316	50142	88087	1177	43654	74781	1130	41569	70610	1084	39524	66569	1038	37514	62651
	-15	1216	17632	29244	1077	15458	25039	1030	14742	23699	984	14033	22393	937	13328	21117
	-10	1223	18490	30952	1084	16215	26500	1037	15468	25084	991	14727	23702	945	13991	22353
	-5	1230	19438	32842	1091	17051	28115	1044	16267	26612	998	15491	25147	951	14719	23715
	0	1236	20578	35075	1097	18053	30021	1051	17226	28416	1004	16404	26849	958	15590	25321
	5	1243	21868	37599	1103	19184	32170	1057	18305	30447	1011	17434	28767	964	16569	27127
	10	1249	23773	41245	1109	20846	35265	1063	19890	33369	1016	18941	31520	970	18002	29718
	15	1258	26153	45742	1119	22929	39088	1072	21875	36980	1026	20832	34925	980	19801	32925
1 5 0 0	20	1267	29147	51375	1128	25536	43862	1082	24360	41485	1035	23196	39170	989	22046	36919
	25	1277	33015	58620	1137	28891	49980	1091	27552	47253	1045	26229	44599	998	24821	42018
	30	1286	37963	67848	1147	33164	57744	1100	31609	54560	1054	30078	51469	1007	28566	48464
	34	1293	42881	76943	1154	37388	65362	1108	35616	61724	1061	33871	58192	1015	32154	54766
	-15	1200	16143	27069	1061	14138	23153	1014	13477	21905	968	12822	20689	922	12172	19502
	-10	1207	16892	28596	1068	14799	24458	1021	14111	23142	975	13428	21858	928	12749	20604
	-5	1214	17715	30278	1074	15525	25896	1028	14806	24503	981	14091	23142	935	13382	21816
	0	1220	18700	32257	1080	16391	27583	1034	15633	26098	988	14882	24650	941	14134	23235
	5	1226	19806	34478	1087	17363	29476	1040	16561	27887	994	15766	26338	947	14976	24826
	10	1231	21435	37689	1091	18783	32196	1045	17915	30454	999	17054	28756	952	16200	27100
1 0 0	15	1235	23514	41766	1096	20593	35645	1050	19638	33705	1003	18690	31813	957	17753	29973
	20	1245	26016	46609	1105	22775	39750	1059	21717	37579	1012	20669	35464	966	19633	33406
	25	1254	29195	52743	1114	25538	44935	1068	24347	42467	1022	23169	40065	975	22004	37728
	30	1263	33181	60418	1123	28988	51398	1077	27627	48555	1031	26283	45789	984	24955	43101
	34	1270	37062	67840	1131	32335	57630	1084	30804	54416	1038	29294	51293	991	27805	48261
	-15	1191	14746	24926	1051	12908	21313	1005	12303	20163	959	11703	19042	912	11104	17945
	-10	1190	15442	26436	1051	13512	22585	1004	12877	21360	958	12246	20164	911	11618	18997
	-5	1196	16158	27938	1057	14145	23868	1011	13483	22575	964	12824	21311	918	12171	20079
	0	1202	17012	29697	1063	14896	25368	1017	14201	23992	970	13509	22649	924	12824	21340
	5	1208	17966	31663	1069	15734	27041	1022	15000	25573	976	14272	24141	930	13550	22745
1 0 0	10	1213	19358	34480	1073	16948	29426	1027	16158	27823	981	15374	26261	934	14595	24736
	15	1217	21121	38036	1078	18483	32433	1031	17618	30656	985	16761	28924	938	15911	27237
	20	1221	23297	42410	1081	20370	36120	1035	19413	34129	989	18465	32189	942	17525	30299
	25	1229	25935	47655	1090	22666	40554	1044	21600	38309	997	20543	36122	951	19498	33996
	30	1238	29188	54115	1099	25488	45999	1053	24283	43437	1006	23091	40943	960	21914	38521
	34	1245	32303	60266	1106	28181	51169	1060	26842	48302	1013	25518	45514	967	24212	42806



Figure 4-23 (Sheet 22 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7⁰**
ANTI - ICE SYSTEMS OFF **11,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 0 0	-25	1365	39186	58132	1226	34490	50111	1179	32967	47569	1133	31466	45092	1086	29985	42677
	-20	1377	42023	62625	1238	36975	53965	1191	35341	51224	1145	33732	48554	1099	32147	45954
	-15	1389	45386	67939	1250	39911	58510	1203	38143	55530	1157	36403	52629	1111	34690	49806
	-10	1401	49408	74274	1262	43407	63909	1215	41474	60639	1169	39575	57460	1123	37706	54366
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	10	1447	84193	126787	1308	73016	107916	1262	69495	102056	1215	66068	96397	1169	62732	90933
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	-10	1390	45942	69744	1251	40392	60027	1204	38600	56957	1158	36838	53971	1111	35101	51063
	-5	1402	50223	76556	1262	44107	65823	1216	42139	62440	1170	40204	59150	1123	38302	55951
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	5	1425	62569	95843	1285	54728	82118	1239	52224	77816	1193	49772	73644	1146	47369	69597
	10	1436	75428	115195	1297	65625	98266	1250	62519	92988	1204	59490	87886	1157	56533	82950
	15	1447	94977	143940	1308	81930	121940	1261	77847	115143	1215	73889	108599	1169	70048	102296
	19	1456	121614	305351	1317	103650	241567	1270	98122	223414	1224	92803	135118	1178	87681	126926
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1 5 0 0	-15	1360	37998	58293	1220	33447	50200	1174	31971	47636	1128	30516	45139	1081	29079	42704
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	5	1405	54112	84490	1266	47446	72491	1220	45307	68719	1173	43205	65053	1127	41143	61495
	10	1417	63799	99577	1277	55725	85159	1231	53150	80645	1184	50628	76269	1138	48160	72029
	15	1428	77733	120899	1288	67496	102891	1242	64259	97289	1195	61103	91874	1149	58028	86644
	20	1438	101128	155689	1299	86893	131384	1253	82459	123903	1206	78166	116709	1160	74011	109795
	22	1443	115083	298722	1304	98254	236573	1257	93056	139081	1211	88048	130810	1164	83216	122878
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1 5 0 0	-15	1341	34218	53283	1202	30126	45868	1155	28794	43515	1109	27481	41223	1062	26182	39887
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	10	1397	54798	87272	1258	47992	74752	1211	45807	70817	1165	43664	66998	1118	41560	63292
	15	1408	65137	103686	1268	56805	88493	1222	54150	83743	1176	51553	79142	1129	49011	74686
	20	1418	81442	128995	1279	70519	109449	1233	67074	103382	1186	63721	97528	1140	60457	91879
	25	1429	108900	293160	1290	93116	143071	1243	88225	134717	1197	83504	126702	1150	78944	119013
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1 4 0 0	-15	1322	30933	48876	1182	27228	42046	1136	26022	39879	1090	24829	37765	1043	23649	35703
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	5	1366	41696	67461	1227	36655	57937	1180	35023	54928	1134	33417	52001	1087	31833	49153
	10	1377	47625	77304	1237	41780	66265	1191	39898	62790	1145	38046	59411	1098	36224	56128
	15	1387	55529	90296	1248	48568	77198	1202	46336	73087	1155	44146	69099	1109	41998	65231
	20	1398	67433	109505	1259	58682	93222	1212	55897	88139	1166	53176	83221	1119	50515	78462
	25	1408	85996	138804	1269	74212	117355	1223	70509	110719	1176	66910	104323	1130	63411	98159
	30	1419	116930	382570	1279	99466	292243	1233	94088	267534	1187	88909	244977	1140	83918	128685
1 4 0 0	-15	1302	28049	44961	1163	24680	38646	1116	23579	36639	1070	22492	34684	1024	21415	32776
	-10	1313	29770	48057	1174	26199	41306	1127	25035	39164	1081	23884	37076	1035	22745	35039
	-5	1324	31756	51612	1185	27948	44356	1138	26708	42056	1092	25483	39813	1046	24272	37628
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	15	1367	47959	79554	1227	42025	68076	1181	40114	64465	1135	38235	60957	1088	36386	57548
	20	1377	56950	94596	1238	49722	80690	1191	47407	76332	1145	45138	72108	1099	42913	68014
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1 4 0 0	-15	1402	101962	318701	1262	87216	140114	1216	82633	131851	1169	78201	123919	1123	73914	116306
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	10	1459	170766	743519	1319	163307	336685	1273	158511	288913	1227	148878	212448	1220	143999	194277
	15	1470	208766	1043519	1330	201000	446609	1285	198819	366279	1239	188826	258292	1242	184009	230630
	20	1481	258766	1543519	1341	251016	607916	1297	248995	512056	1250	238995	332997	1262	232732	290933
	25	1492	328766	2043519	1352	301073	768685	1308	308995	662056	1262	298995	402997	1273	298999	340277

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS OFF 11,000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-15	1282	25499	41456	1143	22420	35596	1096	21414	33734	1050	20417	31917	1004	19431	30146
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	-5	1304	28646	47262	1165	25201	40585	1118	24077	38466	1072	22965	36400	1025	21865	34387
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	10	1335	36910	62075	1196	32432	53221	1150	30979	50422	1103	29545	47697	1057	28130	45046
	15	1346	41847	70732	1206	36710	60547	1160	35049	57335	1113	33412	54212	1067	31801	51178
	20	1356	48816	82795	1217	42710	70701	1170	40745	66900	1124	38813	63210	1077	36914	59628
	25	1366	58654	99629	1227	51105	84766	1180	48691	80117	1134	46326	75613	1087	44008	71251
	30	1376	72744	123336	1237	62984	104380	1190	59892	98489	1144	56877	92802	1097	53934	87310
	32	1380	80331	135910	1241	69309	114688	1194	65835	108117	1148	62456	101784	1101	59166	95680
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1 3 0 0	-15	1263	23208	38245	1124	20390	32804	1077	19467	31075	1031	18553	29387	984	17647	27741
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	-5	1283	25920	43397	1144	22788	37229	1097	21763	35269	1051	20750	33360	1004	19746	31498
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	10	1314	32817	56115	1175	28836	48088	1128	27541	45548	1082	26262	43074	1035	24997	40665
	15	1324	36817	63347	1185	32314	54219	1138	30853	51336	1092	29412	48531	1046	27991	45804
	20	1334	42328	73204	1195	37079	62538	1148	35383	59179	1102	33712	55914	1056	32067	52742
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	30	1354	60120	104561	1214	52273	88731	1168	49769	83788	1122	47317	79005	1075	44915	74375
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1 2 5 0 0	-15	1247	21106	35200	1108	18533	30170	1062	17690	28571	1015	16853	27010	969	16024	25488
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	5	1282	26633	45940	1143	23404	39363	1097	22350	37278	1050	21305	35244	1004	20272	33264
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	20	1312	37024	65228	1173	32451	55720	1126	30968	52720	1080	29505	49803	1033	28062	46967
	25	1322	42893	76013	1182	37512	64793	1136	35775	61264	1089	34065	57836	1043	32381	54509
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	5	1260	24024	42067	1121	21092	36003	1074	20132	34078	1028	19182	32203	982	18240	30375
	10	1270	26276	46385	1131	23064	39680	1084	22015	37555	1038	20977	35485	991	19948	33467
	15	1280	28996	51600	1140	25439	44109	1094	24280	41739	1047	23133	39430	1001	22000	37184
	20	1289	32602	58468	1150	28576	49923	1103	27266	47223	1057	25973	44596	1011	24696	42042
	25	1299	37269	67337	1159	32615	57398	1113	31107	54266	1067	29620	51223	1020	28153	48265
	30	1308	43265	78658	1169	37776	66897	1122	36005	63201	1076	34262	59615	1030	32546	56135
	32	1312	46196	84164	1173	40287	71498	1126	38384	67524	1080	36513	63669	1033	34672	59931
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1 1 5 0 0	-15	1215	17529	29922	1076	15366	25599	1029	14655	24225	983	13950	22884	936	13248	21573
	-10	1222	18363	31658	1083	16104	27085	1036	15361	25631	990	14625	24213	943	13893	22829
	-5	1229	19302	33604	1090	16931	28748	1043	16152	27204	997	15381	25700	950	14614	24231
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	5	1242	21656	38437	1102	18998	32866	1056	18128	31099	1010	17265	29376	963	16409	27696
	10	1247	23621	42347	1108	20712	36181	1061	19760	34226	1015	18818	32322	968	17883	30465
	15	1256	25893	46833	1117	22700	39992	1071	21657	37827	1024	20624	35717	978	19602	33663
	20	1266	28863	52663	1127	25287	44929	1080	24121	42484	1034	22969	40104	987	21829	37789
	25	1275	32629	60056	1136	28556	51170	1089	27231	48365	1043	25924	45638	997	24632	42986
	30	1284	37361	69301	1145	32644	58943	1099	31116	55682	1052	29608	52513	1006	28123	49438
	32	1288	39631	73720	1149	34598	62646	1102	32969	59163	1056	31365	55782	1010	29785	52501
	32	1288	39631	73720	1149	34598	62646	1102	32969	59163	1056	31365	55782	1010	29785	52501
1 1 0 0	-15	1198	15996	27622	1058	14005	23604	1012	13351	22328	966	12701	21082	919	12054	19864
	-10	1205	16721	29170	1065	14646	24928	1019	13965	23581	973	13288	22266	926	12615	20982
	-5	1211	17531	30895	1072	15362	26403	1026	14650	24977	979	13941	23583	933	13239	22225
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	5	1224	19548	35150	1084	17134	30028	1038	16342	28402	991	15556	26816	945	14777	25272
	10	1228	21214	38564	1089	18587	32918	1042	17726	31128	996	16873	29384	950	16027	27685
	15	1233	23193	42622	1093	20308	36347	1047	19365	34361	1001	18431	32426	954	17504	30540
	20	1241	25665	47627	1102	22465	40587	1056	21421	38360	1009	20385	36191	963	19361	34080
	25	1251	28744	53863	1111	25141	45852	1065	23968	43323	1018	22807	40862	972	21659	38468
	30	1260	32543	61530	1120	28431	52306	1074	27096	49400	1027	25776	46573	981	24474	4382

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7⁰**
ANTI - ICE SYSTEMS OFF **12,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-30	1376	41954	62449	1237	36912	53813	1191	35281	51080	1144	33673	48417	1098	32090	45824
	-25	1389	45089	67434	1249	39653	58083	1203	37898	55128	1157	36171	52251	1110	34469	49449
	-20	1401	48737	73210	1262	42833	63018	1215	40930	59801	1169	39059	56672	1123	37220	53629
	-15	1413	53134	80144	1274	46647	68920	1228	44563	65385	1181	42515	61947	1135	40505	58609
	-10	1426	58419	88430	1286	51208	75942	1240	48899	72018	1193	46634	68208	1147	44414	64511
	-5	1438	65098	98808	1298	56937	84694	1252	54334	80272	1205	51787	75985	1159	49294	71830
	0	1449	73609	111905	1310	64183	95671	1264	61193	90605	1217	58273	85701	1171	55422	80956
	5	1461	87355	132411	1322	75744	112687	1276	72091	106569	1229	68539	100664	1183	65085	94967
	10	1473	111217	239958	1334	95437	140764	1287	90545	132780	1241	85823	125116	1194	81259	117755
	14	1475	117657	263629	1336	100676	212990	1289	95432	139607	1243	90379	131461	1197	85506	123648
1 6 0 0	-25	1378	42128	63595	1239	37068	54781	1192	35430	51991	1146	33818	49276	1099	32227	46629
	-20	1390	45360	68802	1251	39892	59237	1204	38126	56215	1158	36388	53273	1112	34678	50411
	-15	1402	49215	74998	1263	43247	64521	1217	41325	61217	1170	39435	58003	1124	37576	54877
	-10	1414	53799	82328	1275	47219	70751	1229	45106	67107	1182	43030	63566	1136	40992	60125
	-5	1426	59521	91405	1287	52149	78430	1240	49789	74356	1194	47477	70403	1148	45210	66567
	0	1438	66696	102694	1299	58292	87931	1252	55613	83309	1206	52994	78832	1159	50431	74494
	5	1450	78010	119974	1310	67874	102347	1264	64668	96859	1218	61543	91554	1171	58494	86424
	10	1461	96882	147895	1322	83616	125352	1275	79467	118390	1229	75446	111688	1183	71545	105234
	14	1470	120615	294729	1331	103009	235090	1285	97585	217957	1238	92361	135621	1192	87329	127482
	18	1473	129259	333136	1333	109960	262077	1287	104046	242025	1240	98364	223477	1194	92904	206290
1 5 5 0 0	-20	1371	40450	62334	1232	35601	53672	1186	34031	50931	1139	32483	48260	1093	30957	45660
	-15	1383	43585	67529	1244	38342	58115	1198	36648	55141	1151	34978	52244	1105	33334	49425
	-10	1395	47255	73591	1256	41540	63286	1210	39697	60034	1163	37883	56871	1117	36099	53796
	-5	1407	51758	80977	1268	45443	69560	1221	43412	65965	1175	41418	62473	1128	39457	59078
	0	1419	57279	89977	1279	50205	77175	1233	47938	73153	1186	45715	69251	1140	43534	65463
	5	1430	65706	103335	1291	57411	88398	1244	54767	83724	1198	52180	79195	1152	49649	74809
	10	1441	79056	123920	1302	68695	105531	1256	65421	99812	1209	62229	94285	1163	59118	88946
	15	1453	100123	155573	1313	86201	131512	1267	81859	124099	1221	77654	116968	1174	73579	110109
	18	1459	120908	321718	1320	103122	253767	1274	97646	234493	1227	92374	216628	1181	87297	129734
	20	1464	140367	440238	1324	118655	332224	1278	112052	303308	1232	105731	277130	1185	99674	253336
1 5 0 0	-15	1364	38849	61167	1225	34197	52637	1178	32689	49938	1132	31202	47309	1086	29735	44748
	-10	1376	41834	66254	1237	36809	56988	1190	35182	54058	1144	33581	51208	1097	32001	48432
	-5	1387	45442	72369	1248	39954	62201	1202	38182	58992	1155	36437	55870	1109	34720	52834
	0	1399	49789	79701	1260	43725	68428	1213	41773	64878	1167	39854	61428	1120	37966	58074
	5	1410	56254	90315	1271	49294	77392	1224	47061	73333	1178	44872	69394	1132	42724	65573
	10	1421	66104	106093	1282	57699	90617	1236	55022	85779	1189	52402	81092	1143	49839	76554
	15	1432	800754	129099	1293	70048	109707	1247	66669	103685	1200	63378	97870	1154	60173	92257
	20	1443	106058	276786	1304	90956	141175	1258	86265	133047	1211	81731	125242	1165	77347	117747
	22	1448	121296	358932	1308	103299	278786	1262	97763	256461	1216	92436	235926	1169	87306	132231
	25				1315	129574	481997	1268	122063	428750	1222	114904	382892	1176	108074	342993
1 4 5 0 0	-15	1345	34810	55672	1205	30648	47891	1159	29296	45427	1112	27960	43024	1066	26641	40682
	-10	1356	37267	59992	1217	32807	51595	1170	31359	48936	1124	29931	46347	1078	28522	43825
	-5	1367	40204	65130	1228	35376	55983	1182	33813	53093	1135	32271	50278	1089	30751	47539
	0	1379	43690	71206	1239	38414	61159	1193	36710	57989	1147	35032	54905	1100	33378	51905
	5	1390	48766	79825	1251	42812	68466	1204	40894	64889	1158	39009	61414	1111	37154	58037
	10	1401	56264	92273	1261	49257	78953	1215	47011	74773	1169	44808	70718	1122	42646	66785
	15	1412	66936	109720	1272	58345	93539	1226	55610	88486	1180	52937	83596	1133	50321	78862
	20	1422	84137	137198	1283	72785	116244	1237	69211	109751	1190	65734	103489	1144	62353	97453
	25	1433	113218	348241	1294	96646	271012	1247	91524	249401	1201	86586	135087	1155	81823	126816
	26	1435	121403	408352	1296	103239	310729	1249	97654	284194	1203	92284	260033	1157	87114	237962
1 4 0 0	-20	1313	29518	47594	1174	25981	40918	1128	24828	38799	1081	23687	36732	1035	22559	34717
	-15	1325	31324	50869	1185	27575	43732	1139	26355	41470	1093	25148	39263	1046	23955	37112
	-10	1336	33369	54576	1197	29377	46914	1150	28078	44486	1104	26796	42121	1057	25528	39815
	-5	1347	35789	58943	1208	31502	50652	1161	30109	48028	1115	28735	45472	1069	27379	42984
	0	1358	38624	64048	1219	33984	55012	1172	32479	52155	1126	30996	49375	1080	29533	46669
	5	1369	42684	71169	1230	37516	61064	1183	35844	57875	1137	34199	54775	1091	32578	51760
	10	1380	48532	81214	1241	42571	69559	1194	40651	65891	1148	38763	62328	1101	36906	58867
	15	1391	56577	94868	1251	49472	81032	1205	47197	76696	1158	44964	72489	1112	42775	68412
	20	1401	68906	115416	1262	59938	98150	1215	57088	92767	1169	54303	87561	1123	51583	82529
	25	1412	88083	146672	1272	75959	123848	1226	72155	116797	1179	68459	110005	1133	64868	103466
1 4 0 0	-20	1422	120926	470852	1283	102699	349134	1236	97097	317063	1190	91711	288224	1143	86527	262174



Figure 4-23 (Sheet 25 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7° ANTI - ICE SYSTEMS OFF 12.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-20	1293	26755	43771	1154	23536	37595	1107	22484	35633	1061	21444	33721	1015	20413	31855
	-15	1304	28283	46625	1165	24888	40050	1119	23781	37965	1072	22684	35929	1026	21600	33946
	-10	1315	30000	49834	1176	26405	42807	1130	25233	40579	1083	24074	38407	1037	22928	36290
	-5	1326	32015	53583	1187	28179	46021	1141	26931	43626	1094	25696	41290	1048	24476	39016
	0	1337	34351	57923	1198	30230	49732	1152	28891	47141	1105	27568	44616	1059	26262	42158
	5	1348	37646	63888	1209	33108	54814	1162	31635	51945	1116	30183	49155	1069	28749	46438
	10	1359	42296	72142	1219	37143	61811	1173	35478	58554	1126	33836	55385	1080	32220	52307
	15	1369	48519	83086	1230	42515	71044	1183	40580	67257	1137	38680	63581	1091	36811	60012
	20	1379	57701	98996	1240	50371	84371	1194	48025	79793	1147	45725	75356	1101	43470	71057
	25	1390	71151	121943	1250	61746	103409	1204	58763	97644	1158	55851	92073	1111	53008	86693
	30	1400	92089	156835	1261	79151	131952	1214	75103	124287	1168	71178	116917	1121	67369	109828
	1 3 0 0 0	-20	1273	24307	40339	1133	21364	34607	1087	20402	32787	1040	19448	31011	994	18503
-15		1284	25610	42844	1144	22519	36763	1098	21510	34834	1051	20509	32951	1005	19519	31115
-10		1294	27062	45641	1155	23806	39169	1109	22743	37117	1062	21690	35114	1016	20648	33162
-5		1305	28755	48887	1166	25300	41954	1120	24173	39756	1073	23058	37613	1027	21955	35526
0		1316	30701	52614	1177	27013	45145	1130	25811	42779	1084	24623	40474	1037	23448	38228
5		1326	33408	57669	1187	29384	49458	1141	28075	46859	1094	26782	44329	1048	25505	41866
10		1337	37164	64552	1198	32656	55304	1151	31193	52383	1105	29750	49541	1058	28326	46776
15		1347	42081	73495	1208	36917	62868	1161	35247	59519	1115	33603	56265	1069	31983	53103
20		1357	49117	86139	1218	42974	73503	1172	40997	69534	1125	39054	65682	1079	37144	61946
25		1367	58965	103654	1228	51376	88123	1182	48950	83269	1135	46573	78568	1089	44245	74019
30		1377	73316	128782	1238	63471	108889	1192	60354	102713	1145	57314	96752	1099	54348	91000
1 2 5 0 0		-20	1255	22064	37089	1116	19382	31794	1070	18503	30111	1023	17631	28468	977	16768
	-15	1263	23222	39402	1124	20403	33774	1078	19481	31987	1031	18566	30243	985	17660	28543
	-10	1273	24480	41903	1134	21516	35920	1087	20546	34021	1041	19586	32169	994	18634	30363
	-5	1284	25915	44735	1144	22785	38351	1098	21762	36326	1051	20749	34352	1005	19746	32428
	0	1294	27550	47962	1155	24228	41117	1108	23143	38947	1062	22070	36833	1016	21008	34773
	5	1304	29801	52292	1165	26203	44813	1119	25031	42446	1072	23871	40139	1026	22724	37892
	10	1315	32875	58100	1175	28888	49754	1129	27591	47115	1082	26310	44545	1036	25044	42045
	15	1325	36824	65520	1185	32322	56042	1139	30862	53051	1093	29422	50142	1046	28000	47312
	20	1335	42336	75777	1195	37088	64691	1149	35393	61202	1103	33723	57813	1056	32078	54521
	25	1345	49779	89536	1205	43479	76227	1159	41454	72053	1112	39464	68004	1066	37510	64081
	30	1354	60116	108451	1215	52275	91963	1169	49772	86818	1122	47320	81840	1076	44920	77025
	1 2 0 0 0	-20	1239	20048	34110	1100	17599	29216	1054	16795	27660	1007	15998	26142	961	15207
-15		1247	21040	36148	1108	18475	30961	1061	17634	29313	1015	16801	27706	968	15973	26137
-10		1255	22138	38407	1115	19443	32893	1069	18561	31143	1023	17687	29437	976	16819	27771
-5		1262	23405	41003	1123	20559	35112	1076	19627	33242	1030	18705	31420	983	17789	29642
0		1272	24799	43839	1132	21789	37540	1086	20806	35544	1040	19831	33597	993	18865	31699
5		1282	26685	47576	1143	23449	40734	1096	22391	38565	1050	21345	36453	1003	20309	34394
10		1292	29227	52527	1153	25674	44948	1106	24514	42548	1060	23369	40213	1013	22235	37938
15		1302	32442	58761	1162	28476	50237	1116	27186	47544	1070	25912	44923	1023	24652	42372
20		1312	36836	67216	1172	32288	57380	1126	30814	54279	1079	29359	51264	1033	27924	48334
25		1321	42599	78269	1182	37262	66675	1136	35538	63030	1089	33840	59490	1043	32169	56056
30		1331	50318	92972	1192	43874	78964	1145	41803	74575	1099	39771	70324	1052	37773	66204
1 1 5 0 0		-20	1223	18241	31407	1083	15997	26874	1037	15261	25434	991	14531	24030	944	13804
	-15	1230	19094	33209	1091	16754	28420	1045	15986	26898	998	15222	25412	952	14466	23964
	-10	1238	20035	35199	1098	17584	30122	1052	16780	28509	1005	15982	26936	959	15191	25402
	-5	1245	21113	37474	1105	18534	32065	1059	17689	30348	1013	16851	28674	966	16019	27041
	0	1252	22331	40043	1112	19605	34256	1066	18712	32420	1020	17828	30631	973	16950	28886
	5	1259	23967	43403	1119	21038	37115	1073	20081	35123	1027	19132	33180	980	18191	31288
	10	1268	26086	47656	1129	22897	40738	1083	21856	38548	1036	20824	36413	990	19803	34335
	15	1278	28732	52948	1139	25209	45232	1092	24059	42790	1046	22923	40415	1000	21800	38104
	20	1288	32286	60012	1148	28299	51206	1102	27003	48426	1056	25723	45723	1009	24457	43093
	25	1297	36838	69053	1158	32241	58823	1112	30752	55602	1065	29281	52470	1019	27832	49430
	30	1307	42761	80768	1167	37340	68645	1121	35591	64839	1075	33869	61146	1028	32173	57563
	1 1 0 0 0	-20	1205	16612	28945	1066	14554	24742	1020	13878	23407	973	13205	22102	927	12537
-15		1213	17352	30548	1073	15208	26114	1027	14504	24706	981	13805	23331	934	13110	21990
-10		1220	18161	32309	1081	15925	27622	1034	15189	26132	988	14460	24679	941	13736	23263
-5		1227	19084	34312	1087	16738	29331	1041	15968	27750	995	15204	26208	948	14445	24704
0		1233	20119	36561	1094	17650	31251	1048	16840	29566	1001	16036	27922	955	15239	26321
5		1239	21512	39513	1100	18870	33760	1054	18004	31935	1007	17145	30156	961	16294	28424
10		1244	23358	43363	1105	20479	37020	1059	19537	35011	1012	18603	33053	966	17678	31146
15		1253	25558	47903	1114	22403	40874	1068	21373	38651	1021	20352	36485	975	19342	34378
20		1263	28468	53873	1124	24939	45928	1077	23788	43416	1031	22651	40975	984	21524	38597
25		1272	32121	61378	1133	28111	52259	1086	26806	49382	1040	25518	46586	994	24246	43869
30		1281	36768	70901	1142	32126	60259	1096	30622	56912	1049	29137	53659	1003	27674	50502

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7°**
ANTI - ICE SYSTEMS OFF **13,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1387	45274	67581	1248	39808	58204	1202	38043	55240	1155	36305	52354	1109	34595	49545
6	-30	1400	48733	73087	1261	42826	62913	1215	40923	59703	1168	39051	56578	1122	37210	53539
3	-25	1413	52833	79576	1274	46388	68445	1227	44316	64938	1181	42282	61529	1135	40284	58216
0	-20	1426	57711	87260	1287	50607	74971	1240	48330	71107	1194	46098	67356	1147	43907	63712
0	-15	1438	63619	96521	1299	55689	82801	1253	53157	78499	1206	50678	74326	1160	48250	70280
0	-10	1451	70963	107930	1311	61964	92396	1265	59104	87541	1219	56310	82839	1172	53578	78285
	-5	1463	80752	122920	1324	70257	104914	1277	66940	99309	1231	63710	93893	1184	60560	88658
	0	1475	93713	142491	1336	81115	121108	1289	77166	114492	1243	73334	108115	1197	69612	101969
	5	1487	117714	243318	1348	100844	199041	1301	95633	140850	1255	90610	132684	1209	85765	124852
	6	1489	124192	265387	1350	106092	215510	1304	100523	200880	1257	95165	139057	1211	90005	130766
	9	1497	148769	371527	1357	125714	290700	1311	118727	268100	1264	112049	247276	1218	105660	228043
1	-30	1389	45355	68688	1250	39885	59140	1204	38119	56123	1157	36380	53186	1111	34668	50327
6	-25	1402	48956	74496	1263	43024	64102	1216	41112	60822	1170	39233	57632	1123	37384	54529
0	-20	1414	53196	81310	1275	46705	69904	1229	44619	66312	1182	42570	62820	1136	40558	59428
0	-15	1427	58271	89435	1288	51090	76795	1241	48789	72823	1195	46533	68967	1148	44320	65224
0	-10	1439	64488	99314	1300	56431	85136	1253	53859	80692	1207	51342	76384	1161	48878	72208
	-5	1451	72627	112080	1312	63370	95848	1266	60431	90779	1219	57560	85873	1173	54756	81125
	0	1463	83143	128388	1324	72256	109431	1278	68821	103539	1231	65477	97849	1185	62221	92354
	5	1475	101876	156264	1336	87838	132352	1290	83460	124982	1243	79221	117892	1197	75114	111071
	9	1485	124776	290652	1345	106511	233532	1299	100896	216989	1253	95493	201518	1206	90291	132625
	10	1487	132209	325564	1348	112488	258351	1301	106450	239191	1255	100655	221396	1208	95086	204839
	13				1355	137808	390584	1308	129850	354380	1262	122279	322066	1215	115065	293056
1	-25	1383	43380	67116	1244	38165	57769	1197	36478	54814	1151	34818	51938	1105	33183	49140
5	-20	1395	46787	72771	1256	41138	62601	1210	39317	59392	1163	37523	56269	1117	35759	53232
5	-15	1408	50794	79410	1268	44622	68256	1222	42636	64742	1176	40684	61326	1129	38765	58005
0	-10	1420	55606	87339	1280	48786	74984	1234	46598	71099	1188	44451	67328	1141	42343	63665
	-5	1432	61751	97353	1292	54071	83440	1246	51617	79078	1200	49213	74847	1153	46856	70744
	0	1444	69440	109782	1304	60640	93877	1258	57841	88907	1211	55104	84094	1165	52430	79436
	5	1455	82473	130056	1316	71642	110738	1270	68225	104737	1223	64897	98941	1177	61656	93345
	10	1467	101948	159618	1328	87825	135009	1281	83422	127429	1235	79160	120140	1188	75030	113129
	13	1474	120636	311593	1334	103065	247810	1288	97651	229548	1242	92438	212555	1195	87413	131044
	15	1478	139013	411597	1339	117783	315930	1293	111316	289774	1246	105119	265894	1200	99179	244027
	17				1344	137450	448560	1297	129458	402884	1251	121858	362880	1204	114617	327559
1	-20	1376	41465	65585	1237	36492	56429	1190	34882	53534	1144	33296	50716	1098	31733	47972
5	-15	1388	44685	71102	1249	39306	61143	1202	37568	57999	1156	35857	54939	1110	34173	51964
0	-10	1400	48491	77596	1261	42619	66675	1214	40726	63232	1168	38865	59885	1121	37034	56632
	-5	1412	53256	85649	1273	46745	73507	1226	44653	69687	1180	42599	65978	1133	40581	62376
	0	1423	59071	95423	1284	51754	81762	1238	49412	77477	1191	47115	73319	1145	44864	69288
	5	1435	68572	110812	1296	59859	94661	1249	57086	89615	1203	54376	84731	1156	51725	80002
	10	1446	81987	132146	1307	71175	112379	1261	67764	106241	1214	64442	100315	1168	61206	94595
	15	1458	105253	267916	1318	90440	141724	1272	85834	133643	1226	81380	125880	1179	77070	118422
	17	1462	119486	338115	1323	102012	265967	1276	96626	245564	1230	91439	226678	1184	86441	132212
	20				1330	126260	424527	1283	119091	382485	1237	112248	345386	1190	105707	312423
	21							1285	129115	481302	1239	121475	427202	1192	114200	380729
1	-20	1356	36973	59439	1217	32553	51131	1171	31119	48502	1124	29703	45939	1078	28306	43444
4	-15	1368	39599	64088	1229	34858	55114	1182	33321	52275	1136	31806	49512	1090	30312	46822
5	-10	1380	42662	69495	1241	37537	59733	1194	35879	56649	1148	34246	53649	1101	32636	50730
0	-5	1391	46435	76099	1252	40822	65355	1206	39011	61968	1159	37228	58674	1113	35475	55473
	0	1403	50950	83974	1264	44736	72035	1217	42737	68279	1171	40772	64630	1124	38841	61087
	5	1414	58114	96027	1275	50897	82196	1229	48585	77857	1182	46318	73649	1136	44095	69569
	10	1425	67818	112124	1286	59169	95669	1240	56417	90531	1193	53725	85557	1147	51093	80743
	15	1437	83610	137690	1297	72454	116834	1251	68939	110368	1204	65518	104130	1158	62190	98115
	20	1447	110664	324802	1308	94736	256189	1262	89803	142553	1215	85040	134104	1169	80441	126001
	21	1450	118341	375128	1310	100952	290614	1264	95593	267136	1218	90431	245566	1171	85456	133531
	25							1273	128895	591358	1226	121199	514292	1180	113875	450545
1	-20	1336	33131	54113	1197	29172	46527	1150	27884	44123	1104	26612	41780	1058	25355	39498
4	-15	1348	35299	58076	1209	31082	49929	1162	29711	47348	1116	28358	44835	1069	27021	42386
0	-10	1359	37799	62638	1220	33276	53833	1174	31809	51049	1127	30361	48337	1081	28933	45697
	-5	1371	40838	68141	1231	35933	58530	1185	34346	55495	1139	32782	52543	1092	31238	49668
	0	1382	44415	74607	1243	39052	64035	1196	37318	60699	1150	35613	57458	1103	33932	54306
	5	1393	49962	84281	1254	43850	72221	1207	41882	68427	1161	39949	64744	1115	38048	61167
	10	1404	57234	96828	1265	50099	82782	1218	47813	78378	1172	45571	74108	1126	43373	69969
	15	1415	68537	115941	1276	59714	98736	1229	56907	93368	1183	54165	88177	1136	51483	83155
	20	1426	86467	145576	1287	74741	123171	1240	71054	116239	1194	67471	109560	1147	63986	103124
	25	1437	117274	417490	1297	99946	317944	1251	94605	290835	1204	89460	266134	1158	84503	243559
	28				1304	125413	603791	1257	118173	527326	1211	111267	463605	1164	104669	409693



Figure 4-23 (Sheet 27 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS OFF 13.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-20	1316	29808	49445	1176	26238	42481	1130	25075	40274	1084	23925	38121	1037	22786	36022
	-15	1327	31615	52855	1188	27835	45412	1141	26603	43053	1095	25387	40755	1049	24185	38516
	-10	1338	33679	56746	1199	29653	48749	1153	28344	46217	1106	27050	43750	1060	25773	41348
	-5	1350	36161	61392	1210	31831	52722	1164	30425	49980	1117	29037	47310	1071	27668	44712
	0	1361	39042	66783	1221	34352	57321	1175	32833	54334	1129	31335	51427	1082	29856	48597
	5	1372	43426	74697	1232	38162	64038	1186	36462	60679	1139	34786	57412	1093	33137	54239
	10	1382	49025	84724	1243	43004	72514	1197	41065	68674	1150	39159	64946	1104	37285	61327
	15	1393	57432	99521	1254	50212	84932	1207	47900	80363	1161	45634	75935	1115	43411	71644
	20	1404	70048	121357	1264	60912	103095	1218	58012	97410	1172	55178	91913	1125	52410	86603
	25	1414	89867	154843	1275	77452	130582	1229	73560	123096	1182	69780	115891	1136	66111	108959
	28	1420	108352	390189	1281	92583	299547	1235	87699	274553	1188	82983	137095	1142	78428	128637
	1 3 0 0	-20	1295	26903	45309	1155	23668	38891	1109	22612	36856	1063	21566	34869	1016	20531
-15		1306	28423	48268	1167	25014	41437	1120	23901	39270	1074	22801	37158	1027	21712	35100
-10		1317	30144	51618	1178	26534	44313	1131	25357	41997	1085	24194	39742	1038	23043	37543
-5		1328	32193	55581	1189	28338	47707	1142	27083	45214	1096	25843	42786	1049	24617	40420
0		1339	34546	60135	1200	30404	51599	1153	29058	48899	1107	27729	46271	1060	26415	43712
5		1350	38068	66709	1210	33476	57190	1164	31988	54186	1117	30519	51261	1071	29070	48417
10		1360	42472	74882	1221	37302	64118	1175	35631	60726	1128	33984	57429	1082	32362	54226
15		1371	48907	86641	1231	42853	74027	1185	40904	70064	1139	38989	66219	1092	37105	62486
20		1381	58169	103357	1242	50777	88016	1195	48411	83216	1149	46093	78568	1103	43820	74067
25		1391	71833	127607	1252	62328	108110	1206	59315	102051	1159	56373	96199	1113	53503	90552
28		1398	83685	148244	1258	72219	125031	1212	68612	117856	1165	65104	110946	1119	61693	104293
1 2 5 0 0		-20	1273	24343	41613	1134	21398	35679	1088	20435	33795	1041	19480	31957	995	18535
	-15	1284	25631	44199	1145	22540	37903	1099	21531	35907	1052	20530	33959	1006	19540	32061
	-10	1295	27078	47106	1156	23822	40402	1109	22758	38275	1063	21706	36204	1017	20664	34184
	-5	1306	28788	50519	1167	25331	43328	1120	24202	41048	1074	23087	38829	1027	21983	36665
	0	1317	30731	54405	1177	27041	46653	1131	25839	44199	1085	24651	41809	1038	23476	39481
	5	1327	33599	59936	1188	29551	51365	1141	28234	48654	1095	26934	46017	1049	25650	43450
	10	1338	37123	66704	1198	32623	57113	1152	31163	54085	1105	29722	51139	1059	28301	48276
	15	1348	42161	76244	1209	36989	65175	1162	35317	61689	1116	33670	58303	1069	32047	55013
	20	1358	49178	89411	1219	43030	76239	1172	41051	72105	1126	39107	68095	1080	37196	64206
	25	1368	59056	107731	1229	51458	91519	1182	49029	86455	1136	46650	81554	1090	44319	76812
	28	1374	67198	122634	1235	58340	103853	1188	55524	98009	1142	52773	92364	1096	50084	86912
	1 2 0 0	-20	1255	22011	38132	1116	19336	32667	1070	18460	30932	1023	17590	29238	977	16729
-15		1263	23148	40505	1124	20340	34699	1078	19421	32856	1031	18509	31058	985	17607	29307
-10		1273	24398	43100	1134	21445	36924	1087	20479	34965	1041	19522	33054	994	18573	31192
-5		1283	25836	46062	1144	22717	39465	1098	21698	37374	1051	20688	35335	1005	19689	33349
0		1294	27459	49411	1155	24149	42333	1108	23068	40090	1062	21998	37905	1015	20939	35776
5		1304	29820	54112	1165	26220	46342	1119	25047	43884	1072	23886	41489	1026	22738	39157
10		1314	32679	59789	1175	28719	51169	1129	27431	48446	1082	26158	45794	1036	24900	43215
15		1324	36694	67656	1185	32210	57830	1139	30756	54732	1092	29321	51719	1046	27905	48790
20		1334	42141	78259	1195	36922	66766	1149	35235	63151	1102	33573	59639	1056	31937	56231
25		1344	49531	92535	1205	43269	78726	1159	41256	74399	1112	39277	70202	1066	37333	66136
28		1350	55391	103758	1211	48267	88073	1165	45986	83171	1118	43748	78424	1072	41554	73832
1 1 5 0 0		-20	1238	19925	34959	1099	17491	29923	1053	16693	28324	1006	15900	26763	960	15114
	-15	1246	20894	37041	1107	18348	31707	1061	17513	30013	1014	16685	28361	968	15864	26751
	-10	1254	21976	39366	1115	19302	33695	1068	18426	31895	1022	17558	30141	975	16696	28429
	-5	1261	23237	42064	1122	20412	35998	1075	19487	34074	1029	18571	32199	983	17663	30372
	0	1270	24617	45008	1131	21630	38517	1085	20653	36460	1038	19685	34454	992	18727	32502
	5	1281	26581	49042	1141	23354	41957	1095	22301	39715	1048	21258	37530	1002	20226	35402
	10	1291	28926	53853	1151	25409	46053	1105	24263	43587	1058	23128	41184	1012	22007	38847
	15	1300	32172	60428	1161	28240	51628	1115	26961	48849	1068	25697	46145	1022	24448	43516
	20	1310	36482	69117	1171	31981	58965	1125	30522	55766	1078	29081	52656	1032	27660	49636
	25	1320	42160	80514	1181	36882	68542	1134	35176	64779	1088	33497	61128	1041	31842	57584
	28	1326	46528	89236	1186	40630	75835	1140	38731	71634	1094	36864	67561	1047	35027	63612
	1 0 0	-20	1221	18066	32097	1081	15843	27446	1035	15113	25968	988	14387	24526	942	13668
-15		1228	18897	33935	1089	16578	29019	1042	15817	27458	996	15062	25936	950	14312	24451
-10		1236	19819	35976	1096	17392	30764	1050	16597	29111	1003	15806	27497	957	15023	25925
-5		1243	20886	38330	1103	18333	32775	1057	17496	31012	1011	16667	29295	964	15843	27620
0		1250	22078	40966	1110	19381	35021	1064	18499	33138	1017	17623	31301	971	16755	29512
5		1256	23775	44588	1117	20867	38100	1070	19915	36044	1024	18972	34041	977	18038	32091
10		1266	25718	48705	1126	22571	41604	1080	21543	39357	1034	20526	37170	987	19517	35039
15		1275	28375	54264	1136	24893	46321	1090	23758	43811	1043	22634	41367	997	21523	38991
20		1285	31841	61490	1146	27909	52431	1099	26629	49571	1053	25365	46791	1006	24116	44089
25		1294	36297	70766	1155	31768	60240	1109	30300	56927	1062	28850	53706	1016	27421	50581
28		1300	39644	77715	1161	34655	66069	1114	33040	62407	1068	31449	58854	1021	29881	55407

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7°**
ANTI - ICE SYSTEMS OFF **14,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1412	53078	79807	1273	46593	68635	1226	44508	65114	1180	42461	61693	1133	40450	58367
6	-30	1425	57742	87166	1286	50630	74892	1239	48351	71033	1193	46116	67285	1147	43924	63646
3	-25	1438	63319	95904	1299	55434	82292	1252	52916	78023	1206	50450	73881	1160	48036	69865
0	-20	1451	70106	106489	1312	61245	91212	1265	58426	86433	1219	55672	81805	1173	52980	77323
0	-15	1464	78545	119540	1325	68416	102143	1278	65211	96722	1232	62086	91479	1185	59038	86410
0	-10	1476	89787	136664	1337	77876	116370	1291	74134	110079	1244	70495	104007	1198	66959	98151
	-5	1489	105372	186686	1350	90821	135522	1303	86291	127996	1257	81908	120759	1210	77665	113798
	0	1501	129305	254265	1362	110322	208436	1316	104499	194850	1269	98901	182013	1223	93519	169877
	2	1506	144011	301877	1367	122084	243831	1321	115417	226939	1274	109034	211108	1228	102921	196257
1	-35	1401	49170	74696	1262	43202	64265	1215	41280	60975	1169	39390	57774	1122	37531	54661
6	-30	1414	53225	81226	1275	46727	69833	1228	44638	66244	1182	42588	62757	1135	40573	59368
3	-25	1427	58022	88903	1288	50878	76356	1241	48588	72412	1195	46343	68582	1148	44141	64865
0	-20	1440	63780	98090	1300	55832	84126	1254	53296	79749	1207	50811	75503	1161	48378	71386
0	-15	1452	70823	109253	1313	61856	93520	1267	59006	88603	1220	56220	83840	1174	53498	79230
0	-10	1465	80010	123623	1326	69649	105532	1279	66373	99899	1233	63182	94457	1186	60070	89196
	-5	1477	92382	142674	1338	80033	121319	1291	76157	114706	1245	72395	108333	1199	68740	102188
	0	1489	110610	215441	1350	95102	143713	1304	90291	135630	1257	85642	127866	1211	81149	120409
	2	1494	121380	248651	1355	103880	203833	1309	98486	190536	1262	93290	138870	1216	88283	130637
	5	1502	142163	327799	1362	120570	261907	1316	113998	242980	1269	107703	225342	1223	101671	208882
	8							1323	135324	347086	1277	127387	316845	1230	119837	289477
1	-30	1395	46813	72700	1256	41158	62541	1209	39334	59335	1163	37539	56215	1116	35772	53180
5	-25	1408	50610	78990	1268	44463	67907	1222	42486	64415	1175	40541	61019	1129	38630	57719
5	-20	1420	55079	86388	1281	48339	74198	1234	46175	70363	1188	44051	66638	1142	41967	63022
0	-15	1433	60425	95199	1293	52950	81657	1247	50559	77408	1201	48216	73286	1154	45918	69286
0	-10	1445	67203	106253	1306	58760	90968	1259	56070	86186	1213	53439	81553	1166	50864	77064
	-5	1457	75998	120426	1318	66240	102831	1271	63147	97346	1225	60130	92043	1179	57186	86915
	0	1469	88308	139858	1330	76597	118953	1284	72914	112473	1237	69333	106222	1191	65851	100193
	5	1481	107975	234783	1342	92882	143541	1296	88193	135447	1249	83659	127670	1203	79274	120198
	8	1488	124661	308522	1349	106466	247035	1303	100869	229297	1256	95483	212739	1210	90299	197263
	10	1493	140131	398626	1354	118864	309226	1307	112383	284471	1261	106176	261757	1215	100223	240858
	12				1358	138007	422587	1312	130055	382278	1266	122489	346494	1219	115280	314529
1	-25	1388	44545	70762	1249	39185	60861	1202	37453	57734	1156	35749	54692	1109	34069	51731
5	-20	1400	48089	76840	1261	42276	66048	1215	40402	62645	1168	38559	59337	1122	36746	56120
5	-15	1413	52253	83963	1273	45891	72105	1227	43847	68375	1181	41838	64750	1134	39863	61227
0	-10	1425	57415	92720	1286	50352	79523	1239	48088	75379	1193	45868	71358	1146	43689	67455
0	-5	1437	63928	103667	1298	55945	88750	1251	53396	84079	1205	50902	79553	1158	48458	75166
	0	1449	72712	118176	1309	63426	100898	1263	60479	95510	1217	57601	90298	1170	54789	85255
	5	1460	85995	139497	1321	74612	118586	1275	71029	112103	1228	67542	105846	1182	64150	99813
	10	1472	105927	264535	1333	91130	144155	1286	86527	135988	1240	82076	128141	1194	77769	120602
	12	1477	119720	327710	1337	102362	259982	1291	97010	240644	1245	91854	222671	1198	86883	134163
	15	1484	148850	532384	1344	125604	393261	1298	118564	357062	1252	111838	324655	1205	105404	295492
	16				1347	135916	483096	1300	128067	432522	1254	120597	388477	1207	113476	349785
1	-20	1380	42351	68885	1241	37270	59226	1195	35627	56175	1148	34007	53205	1102	32412	50316
4	-15	1392	45659	74752	1253	40159	64234	1207	38384	60916	1160	36636	57689	1114	34916	54552
5	-10	1404	49689	81850	1265	43663	70271	1219	41723	66625	1172	39815	63082	1126	37939	59640
0	-5	1416	54661	90546	1277	47964	77637	1230	45814	73581	1184	43704	69645	1138	41633	65825
	0	1428	61180	101776	1289	53568	87102	1242	51134	82505	1196	48750	78049	1149	46413	73730
	5	1439	70654	117683	1300	61640	100413	1254	58776	95026	1207	55976	89813	1161	53242	84772
	10	1451	84061	139801	1312	72936	118751	1265	69429	112223	1219	66017	105925	1172	62694	99849
	15	1462	110038	310996	1323	94378	247648	1276	89522	143606	1230	84833	135174	1184	80302	127084
	16	1464	117306	353260	1325	100282	277303	1279	95028	255870	1232	89963	236049	1186	85080	134352
	20				1334	133783	584087	1288	126039	513986	1241	118663	454861	1195	111632	404326
	21													1197	121158	531317
1	-20	1360	37555	62139	1220	33066	53418	1174	31610	50660	1128	30174	47974	1081	28756	45358
4	-15	1372	40228	67048	1232	35411	57619	1186	33851	54640	1139	32313	51741	1093	30796	48919
0	-10	1383	43434	72904	1244	38213	62616	1198	36526	59371	1151	34864	56214	1105	33227	53144
0	-5	1395	47321	79966	1256	41596	68622	1209	39750	65048	1163	37934	61576	1116	36146	58201
	0	1406	52304	88898	1267	45910	76186	1221	43855	72191	1174	41835	68311	1128	39851	64546
	5	1418	59330	101195	1279	51949	86540	1232	49585	81946	1186	47270	77496	1139	44999	73181
	10	1429	68859	117658	1290	60069	100303	1243	57272	94889	1197	54539	89651	1151	51868	84586
	15	1440	86072	146493	1301	74526	124125	1254	70893	117201	1208	67361	110528	1162	63925	104097
	20	1451	114856	389029	1312	98164	300944	1266	93007	276502	1219	88035	254060	1173	83238	134632
	21	1453	123174	462872	1314	104872	348925	1268	99248	318343	1221	93837	290639	1175	88630	265450
	25													1184	120045	641786



Figure 4-23 (Sheet 29 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS OFF 14.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-20	1339	33485	56333	1200	29487	48406	1153	28186	45896	1107	26901	43450	1060	25631	41067
	-15	1350	35673	60491	1211	31413	51971	1165	30029	49276	1118	28663	46651	1072	27314	44095
	-10	1362	38266	65397	1223	33688	56166	1176	32203	53249	1130	30739	50410	1083	29294	47647
	-5	1373	41361	71231	1234	36395	61142	1188	34788	57959	1141	33203	54861	1095	31642	51850
	0	1385	45261	78490	1245	39788	67309	1199	38022	63788	1153	36283	60365	1106	34570	57038
	5	1396	50627	88256	1257	44431	75569	1210	42437	71581	1164	40478	67711	1117	38552	63954
	10	1407	57671	100955	1268	50485	86250	1221	48183	81643	1175	45927	77179	1128	43712	72850
	15	1418	69782	122214	1279	60778	103966	1232	57916	98280	1186	55121	92785	1139	52388	87471
	20	1429	88372	154193	1289	76337	130281	1243	72559	122895	1197	68888	115784	1150	65320	108936
	25	1439	121304	511324	1300	103211	378426	1254	97648	343511	1207	92295	312151	1161	87143	283858
1 3 5 0 0	26	1441	131121	656174	1302	111055	461641	1256	104923	413752	1209	99040	371779	1163	93394	334720
	-20	1317	29988	51273	1178	26400	44026	1132	25231	41730	1085	24074	39491	1039	22930	37309
	-15	1329	31800	54833	1190	28000	47083	1143	26763	44628	1097	25540	42237	1050	24331	39908
	-10	1340	33923	58991	1201	29870	50645	1155	28552	48005	1108	27250	45433	1062	25964	42929
	-5	1351	36426	63880	1212	32067	54823	1166	30652	51961	1119	29255	49175	1073	27876	46464
	0	1362	39533	69878	1223	34783	59933	1177	33244	56795	1130	31726	53741	1084	30229	50772
	5	1373	43725	77798	1234	38428	66653	1188	36717	63143	1141	35030	59729	1095	33371	56416
	10	1384	49091	87865	1245	43069	75155	1199	41131	71163	1152	39224	67286	1106	37349	63523
	15	1395	57980	104146	1256	50688	88804	1209	48353	84003	1163	46065	79352	1116	43820	74846
	20	1406	70823	127366	1266	61575	108091	1220	58640	102095	1174	55774	96304	1127	52973	90708
1 2 5 0 0	25	1416	91475	163814	1277	78791	137946	1230	74817	129975	1184	70963	122312	1138	67222	114944
	26	1418	97166	337299	1279	83473	145949	1233	79200	137425	1186	75061	129238	1140	71050	121375
	-20	1296	26952	46815	1156	23713	40160	1110	22656	38050	1063	21608	35992	1017	20572	33987
	-15	1307	28465	49888	1168	25053	42802	1121	23939	40555	1075	22838	38366	1028	21748	36234
	-10	1318	30222	53447	1179	26605	45855	1132	25425	43450	1086	24260	41108	1039	23106	38826
	-5	1329	32272	57593	1190	28410	49403	1143	27152	46811	1097	25910	44288	1050	24681	41830
	0	1340	34785	62619	1201	30614	53693	1154	29258	50871	1108	27919	48125	1061	26597	45453
	5	1351	38120	69152	1211	33525	59247	1165	32035	56122	1118	30565	53082	1072	29116	50127
	10	1361	42302	77301	1222	37160	66151	1175	35497	62639	1129	33859	59228	1083	32246	55914
	15	1372	49035	90130	1232	42967	76951	1186	41014	72814	1140	39094	68800	1093	37206	64906
1 2 5 0 0	20	1382	58331	107707	1243	50919	91643	1196	48547	86621	1150	46224	81761	1104	43946	77056
	25	1392	72318	133716	1253	62742	113166	1207	59706	106786	1160	56743	100627	1114	53852	94685
	26	1394	75977	140450	1255	65806	118695	1209	62590	111953	1162	59455	105451	1116	56399	99183
	-20	1273	24289	42847	1134	21351	36714	1088	20391	34769	1041	19438	32871	995	18495	31022
	-15	1284	25563	45520	1145	22482	39013	1099	21476	36951	1052	20478	34939	1006	19490	32979
	-10	1295	27031	48594	1156	23782	41653	1109	22720	39452	1063	21670	37309	1017	20630	35220
	-5	1306	28728	52144	1167	25280	44694	1120	24154	42334	1074	23041	40036	1027	21939	37797
	0	1317	30785	56403	1177	27088	48332	1131	25884	45779	1085	24694	43294	1038	23516	40873
	5	1327	33478	61865	1188	29447	52985	1141	28135	50178	1095	26841	47449	1049	25562	44793
	10	1338	36798	68574	1198	32343	58681	1152	30898	55560	1105	29471	52525	1059	28064	49575
1 1 5 0 0	15	1348	42023	78908	1209	36872	67407	1162	35205	63786	1116	33565	60271	1069	31948	56858
	20	1358	49897	92629	1219	42868	78926	1172	40898	74627	1126	38963	70460	1080	37060	66420
	25	1368	58964	112063	1229	51381	95115	1182	48956	89825	1136	46582	84709	1090	44255	79760
	26	1370	61478	116930	1231	53512	99148	1184	50969	93604	1138	48481	88245	1092	46045	83064
	-20	1255	21876	39130	1115	19216	33499	1069	18345	31713	1023	17482	29971	976	16625	28272
	-15	1263	22994	41568	1123	20204	35587	1077	19291	33690	1031	18387	31841	984	17489	30038
	-10	1272	24258	44310	1133	21321	37935	1086	20360	35914	1040	19409	33945	993	18465	32025
	-5	1282	25676	47375	1143	22576	40564	1097	21563	38406	1050	20559	36302	1004	19566	34255
	0	1293	27380	51022	1153	24077	43681	1107	23000	41359	1061	21933	39095	1014	20876	36891
	5	1303	29582	55641	1164	26011	47621	1117	24846	45083	1071	23695	42614	1025	22557	40212
1 1 5 0 0	10	1313	32258	61242	1174	28353	52384	1128	27082	49585	1081	25826	46863	1035	24585	44215
	15	1323	36393	69716	1184	31948	59551	1138	30507	56348	1091	29083	53233	1045	27679	50207
	20	1333	41750	80686	1194	36583	68789	1148	34913	65049	1101	33267	61417	1055	31646	57893
	25	1343	49132	95695	1204	42925	81350	1158	40929	76858	1111	38966	72502	1065	37039	68284
	26	1345	50940	99362	1206	44471	84406	1159	42392	79724	1113	40351	75191	1067	38347	70801
	-20	1236	19730	35767	1097	17318	30594	1051	16527	28952	1004	15741	27349	958	14962	25788
	-15	1244	20679	37901	1105	18158	32421	1059	17331	30682	1012	16510	28985	966	15697	27333
	-10	1252	21762	40332	1112	19112	34497	1066	18244	32647	1020	17384	30844	973	16530	29086
	-5	1259	22998	43107	1120	20201	36867	1073	19284	34887	1027	18377	32960	981	17478	31083
	0	1268	24446	46317	1129	21476	39607	1082	20504	37481	1036	19542	35410	989	18588	33393
1 1 5 0 0	5	1278	26266	50263	1139	23077	42974	1092	22034	40666	1046	21003	38419	999	19981	36232
	10	1288	28452	54996	1149	24993	47001	1102	23864	44472	1056	22749	42013	1009	21644	39619
	15	1298	31777	62047	1158	27891	52972	1112	26627	50108	1066	25378	47323	1019	24143	44614
	20	1307	35985	70987	1168	31545	60515	1122	30105	57217	1075	28683	54012	1029	27280	50900
	25	1317	41606	82885	1178	36398	70503	1131	34714	66614	1085	33056	62841	1039	31424	59183
	26	1319	42953	85735	1180	37556	72887	1133	35813	68855	1087	34098	64944	1040	32408	61151

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
SEA LEVEL

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-25	1139	25558	33933	999	22083	28860	953	20951	27245	907	19831	25666	860	18722	24123
6	-20	1149	25536	34048	1009	22094	28991	963	20972	27381	917	19863	25807	870	18764	24268
3	-15	1159	25505	34144	1019	22098	29108	973	20987	27503	927	19888	25935	880	18799	24401
0	-10	1168	25471	34231	1029	22097	29215	983	20997	27617	936	19907	26054	890	18830	24527
0	-5	1178	25426	34314	1039	22087	29318	993	20997	27725	946	19918	26168	900	18852	24647
0	0	1188	25368	34390	1049	22064	29414	1002	20985	27827	956	19918	26276	909	18861	24759
5	5	1197	25529	34796	1058	22228	29784	1012	21151	28187	965	20084	26624	919	19029	25098
10	10	1207	26511	36453	1068	23097	31201	1021	21983	29528	975	20881	27893	928	19790	26295
1	-25	1130	24391	32585	991	21066	27697	944	19980	26139	898	18907	24617	851	17844	23129
6	-20	1140	24369	32697	1001	21076	27824	954	20001	26271	908	18937	24753	861	17884	23269
0	-15	1150	24341	32793	1010	21079	27937	964	20014	26389	918	18961	24877	871	17918	23399
0	-10	1159	24308	32878	1020	21079	28043	974	20025	26502	927	18980	24993	881	17948	23521
0	-5	1169	24266	32961	1030	21069	28143	983	20025	26607	937	18992	25106	891	17969	23638
0	0	1179	24212	33038	1039	21048	28238	993	20015	26708	947	18992	25212	900	17979	23749
5	5	1188	24361	33424	1049	21202	28591	1002	20169	27049	956	19148	25544	910	18136	24071
10	10	1197	25268	34978	1058	22005	29920	1012	20940	28309	965	19885	26733	919	18842	25195
1	-25	1115	22586	30487	976	19489	25882	929	18476	24414	883	17474	22979	837	16482	21578
5	-20	1125	22565	30593	986	19497	26002	939	18494	24539	893	17502	23109	846	16518	21710
0	-15	1135	22538	30685	995	19500	26111	949	18507	24652	902	17523	23226	856	16550	21833
0	-10	1144	22508	30769	1005	19500	26212	959	18517	24759	912	17542	23338	866	16578	21950
0	-5	1154	22470	30850	1014	19491	26309	968	18518	24861	922	17554	23446	875	16598	22062
0	0	1163	22421	30928	1024	19474	26403	977	18510	24960	931	17555	23549	885	16610	22170
5	5	1172	22553	31284	1033	19610	26728	987	18648	25276	940	17694	23855	894	16750	22467
10	10	1182	23353	32688	1042	20319	27928	996	19329	26413	950	18347	24931	903	17374	23482
1	-25	1104	20883	28438	964	18008	24125	918	17068	22750	872	16137	21407	825	15213	20092
5	-20	1113	20861	28537	974	18015	24238	928	17084	22868	881	16161	21527	835	15247	20218
0	-15	1123	20836	28625	984	18018	24341	937	17095	22974	891	16182	21639	844	15275	20332
0	-10	1133	20809	28705	993	18018	24437	947	17105	23076	900	16199	21744	854	15302	20443
0	-5	1142	20774	28784	1003	18012	24531	956	17107	23174	910	16210	21847	863	15321	20549
0	0	1151	20732	28863	1012	17997	24623	965	17101	23270	919	16213	21946	873	15334	20654
5	5	1160	20848	29191	1021	18118	24922	974	17224	23560	928	16338	22229	882	15460	20928
10	10	1169	21553	30458	1030	18745	26006	984	17826	24587	937	16914	23199	891	16012	21844
1	-25	1092	19326	26549	953	16655	22506	906	15779	21216	860	14912	19956	814	14052	18723
4	-20	1102	19306	26644	962	16660	22612	916	15794	21327	870	14935	20070	823	14082	18840
5	-15	1111	19282	26727	972	16663	22710	925	15804	21427	879	14953	20174	833	14110	18950
0	-10	1121	19257	26805	981	16663	22801	935	15813	21524	889	14971	20276	842	14134	19054
0	-5	1130	19226	26882	991	16658	22891	944	15816	21618	898	14981	20373	851	14153	19155
0	0	1139	19188	26959	1000	16645	22979	953	15811	21709	907	14985	20468	860	14165	19255
5	5	1148	19290	27259	1009	16754	23256	962	15921	21977	916	15097	20728	869	14278	19506
10	10	1157	19912	28403	1018	17307	24233	971	16453	22903	925	15607	21604	878	14767	20333
1	-25	1080	17899	24804	941	15412	21009	895	14597	19799	848	13787	18614	802	12985	17457
4	-20	1090	17880	24894	951	15417	21109	904	14609	19901	858	13808	18721	811	13013	17567
0	-15	1099	17857	24973	960	15419	21201	914	14619	19997	867	13825	18820	821	13038	17669
0	-10	1109	17835	25048	969	15419	21287	923	14627	20088	876	13841	18915	830	13061	17768
0	-5	1118	17807	25123	978	15415	21374	932	14631	20179	886	13853	19009	839	13080	17865
0	0	1127	17772	25197	987	15404	21459	941	14627	20266	895	13857	19100	848	13091	17959
5	5	1136	17863	25474	996	15500	21712	950	14726	20513	903	13956	19338	857	13193	18191
10	10	1144	18412	26508	1005	15991	22597	959	15198	21351	912	14409	20131	866	13628	18940



Figure 4-24 (Sheet 1 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
SEA LEVEL

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-25	1069	16586	23185	929	14267	19618	883	13506	18481	837	12751	17368	790	12001	16280
3	-20	1078	16567	23269	939	14271	19712	892	13517	18577	846	12770	17469	799	12027	16384
5	-15	1087	16546	23344	948	14273	19799	902	13527	18668	855	12786	17562	809	12051	16481
0	-10	1096	16525	23416	957	14274	19882	911	13535	18755	864	12801	17652	818	12073	16575
0	-5	1105	16499	23487	966	14270	19964	920	13539	18841	873	12811	17741	827	12090	16666
0	0	1114	16468	23560	975	14261	20046	929	13537	18925	882	12816	17828	836	12102	16756
	5	1123	16548	23815	984	14347	20279	937	13624	19151	891	12906	18048	844	12193	16969
	10	1132	17036	24754	992	14783	21083	946	14043	19912	900	13310	18769	853	12580	17649
1	-25	1057	15373	21676	917	13209	18323	871	12498	17253	825	11793	16208	778	11092	15185
3	-20	1066	15355	21755	927	13213	18412	880	12508	17344	834	11810	16302	787	11115	15281
0	-15	1075	15336	21827	936	13214	18493	889	12517	17430	843	11825	16390	796	11137	15373
0	-10	1084	15316	21895	945	13216	18573	898	12524	17511	852	11839	16475	806	11159	15463
0	-5	1093	15293	21965	954	13213	18651	907	12528	17593	861	11850	16560	814	11174	15548
	0	1102	15264	22033	962	13204	18728	916	12527	17673	870	11855	16643	823	11186	15633
	5	1110	15335	22269	971	13281	18943	925	12606	17883	878	11935	16845	832	11269	15831
	10	1119	15768	23122	980	13670	19675	933	12979	18574	887	12295	17500	840	11614	16449
1	-25	1051	14209	20154	912	12208	17039	865	11549	16045	819	10895	15073	773	10246	14123
2	-20	1060	14193	20228	921	12210	17120	875	11559	16130	828	10910	15159	782	10267	14212
5	-15	1070	14175	20294	930	12211	17195	884	11566	16207	837	10924	15240	791	10287	14295
0	-10	1079	14155	20353	940	12213	17267	893	11573	16282	847	10938	15318	800	10307	14377
0	-5	1088	14135	20420	948	12210	17341	902	11577	16358	855	10947	15397	809	10322	14457
	0	1096	14112	20494	956	12204	17419	910	11577	16439	864	10954	15480	817	10334	14541
	5	1104	14177	20717	964	12274	17622	918	11648	16634	872	11027	15670	825	10408	14724
	10	1112	14563	21494	973	12621	18287	926	11981	17263	880	11347	16263	833	10716	15286
1	-25	1060	13086	18556	920	11263	15727	874	10664	14825	827	10067	13941	781	9474	13076
2	-20	1069	13071	18623	929	11266	15801	883	10672	14901	837	10082	14020	790	9494	13157
0	-15	1078	13054	18680	939	11268	15869	892	10679	14971	846	10095	14093	800	9514	13234
0	-10	1087	13037	18734	948	11268	15932	902	10686	15038	855	10107	14163	809	9531	13306
	-5	1096	13018	18793	957	11267	16000	911	10690	15107	864	10116	14234	818	9546	13380
	0	1104	12996	18859	965	11261	16070	919	10689	15178	872	10120	14306	826	9555	13453
	5	1113	13053	19058	973	11322	16250	927	10752	15353	880	10184	14475	834	9621	13618
	10	1121	13394	19750	982	11630	16844	935	11048	15915	889	10470	15007	842	9895	14119
1	-25	1069	12080	17108	929	10417	14539	883	9869	13718	836	9323	12913	790	8782	12128
5	-20	1078	12067	17169	939	10420	14606	892	9877	13786	846	9337	12985	799	8800	12200
0	-15	1087	12052	17220	948	10421	14665	902	9884	13849	855	9349	13050	809	8818	12269
0	-10	1097	12037	17268	957	10422	14722	911	9890	13909	865	9361	13113	818	8834	12333
	-5	1106	12019	17320	966	10420	14781	920	9893	13970	874	9369	13176	827	8847	12399
	0	1114	11999	17379	975	10415	14844	928	9892	14034	882	9373	13241	835	8855	12464
	5	1122	12048	17555	983	10469	15006	936	9947	14189	890	9430	13393	844	8915	12613
	10	1130	12351	18173	991	10743	15536	945	10213	14694	898	9685	13870	852	9161	13064
1	-25	1078	11172	15790	939	9652	13455	892	9149	12707	846	8651	11976	799	8153	11259
1	-20	1087	11160	15844	948	9654	13514	902	9158	12770	855	8663	12040	809	8171	11325
0	-15	1097	11147	15890	957	9655	13567	911	9164	12825	865	8675	12099	818	8187	11386
0	-10	1106	11133	15932	967	9657	13618	921	9170	12879	874	8685	12154	828	8203	11445
	-5	1115	11117	15978	976	9655	13671	930	9173	12933	883	8692	12210	837	8215	11503
	0	1124	11098	16029	984	9649	13725	938	9171	12989	892	8696	12268	845	8221	11561
	5	1132	11142	16187	993	9698	13870	946	9221	13129	900	8747	12404	853	8274	11693
	10	1140	11413	16741	1001	9944	14347	955	9459	13582	908	8976	12832	862	8497	12100



Figure 4-24 (Sheet 2 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7°
1000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-25	1157	25064	33562	1018	21717	28614	971	20624	27036	925	19544	25494	878	18474	23987
6	-20	1167	25051	33696	1028	21735	28760	981	20652	27186	935	19581	25648	889	18522	24145
3	-15	1177	25014	33781	1038	21731	28866	992	20660	27299	945	19599	25767	899	18550	24270
0	-10	1187	24977	33867	1048	21727	28971	1002	20667	27411	955	19616	25884	909	18577	24393
0	-5	1197	24970	34034	1058	21748	29143	1011	20695	27582	965	19654	26058	919	18624	24568
0	0	1207	24970	34220	1068	21774	29329	1021	20730	27769	975	19697	26244	928	18673	24753
	5	1217	25958	35810	1077	22648	30694	1031	21569	29065	985	20500	27472	938	19442	25915
	10	1226	27739	38566	1087	24206	33041	1041	23054	31282	994	21914	29564	948	20788	27887
1	-25	1148	23933	32249	1009	20727	27476	962	19679	25954	916	18643	24467	869	17617	23013
6	-20	1158	23920	32379	1019	20743	27617	972	19705	26099	926	18679	24616	880	17662	23165
3	-15	1168	23885	32465	1029	20741	27723	982	19713	26210	936	18696	24731	890	17689	23286
0	-10	1178	23851	32551	1039	20738	27827	992	19720	26320	946	18713	24847	900	17716	23407
0	-5	1188	23844	32713	1049	20757	27992	1002	19748	26486	956	18750	25015	909	17760	23575
0	0	1198	23843	32892	1058	20780	28170	1012	19780	26665	965	18789	25194	919	17808	23755
	5	1207	24758	34386	1068	21592	29455	1022	20559	27884	975	19534	26347	929	18521	24846
	10	1217	26404	36964	1078	23033	31650	1031	21932	29958	985	20844	28305	938	19766	26690
1	-25	1134	22165	30169	995	19180	25676	948	18204	24244	902	17237	22843	855	16279	21473
5	-20	1144	22152	30294	1005	19195	25811	958	18227	24381	912	17270	22985	865	16320	21617
5	-15	1154	22121	30377	1014	19192	25911	968	18235	24488	922	17287	23096	875	16346	21733
0	-10	1163	22089	30460	1024	19190	26011	978	18242	24593	931	17302	23205	885	16372	21849
0	-5	1173	22082	30614	1034	19208	26168	987	18267	24750	941	17336	23364	895	16413	22008
0	0	1183	22080	30783	1043	19229	26337	997	18297	24920	951	17373	23533	904	16456	22177
	5	1192	22888	32133	1053	19947	27497	1006	18985	26020	960	18032	24575	914	17089	23164
	10	1201	24334	34446	1062	21214	29466	1016	20195	27881	969	19185	26331	923	18185	24817
1	-25	1122	20509	28165	983	17737	23954	937	16830	22611	890	15930	21297	844	15039	20013
5	-20	1132	20496	28282	993	17750	24080	946	16850	22739	900	15959	21429	854	15076	20148
0	-15	1142	20468	28363	1003	17749	24177	956	16858	22841	910	15976	21535	863	15100	20257
0	-10	1152	20440	28445	1012	17747	24272	966	16866	22942	919	15991	21640	873	15125	20368
0	-5	1161	20432	28588	1022	17763	24420	975	16888	23089	929	16022	21789	883	15163	20517
0	0	1171	20430	28748	1031	17782	24578	985	16915	23248	938	16054	21946	892	15202	20674
	5	1180	21142	29963	1041	18416	25623	994	17523	24239	948	16639	22886	901	15761	21563
	10	1189	22411	32032	1050	19530	27385	1003	18587	25904	957	17653	24458	911	16728	23044
1	-25	1111	18996	26318	971	16416	22365	925	15571	21104	878	14732	19870	832	13901	18664
4	-20	1120	18981	26426	981	16427	22483	935	15589	21224	888	14758	19993	842	13935	18791
5	-15	1130	18956	26506	991	16427	22576	944	15597	21321	898	14775	20095	851	13958	18895
0	-10	1139	18931	26585	1000	16426	22667	954	15605	21418	907	14790	20195	861	13982	19000
0	-5	1149	18923	26720	1010	16440	22805	963	15625	21556	917	14818	20334	870	14016	19139
0	0	1158	18919	26869	1019	16457	22954	973	15649	21704	926	14847	20481	880	14053	19287
	5	1167	19549	27967	1028	17018	23897	982	16189	22600	935	15365	21330	889	14549	20090
	10	1177	20668	29826	1037	18001	25480	991	17128	24096	944	16261	22742	898	15403	21420
1	-25	1099	17605	24607	959	15201	20892	913	14413	19707	867	13631	18548	820	12855	17415
4	-20	1108	17591	24709	969	15211	21003	923	14430	19821	876	13654	18663	830	12886	17534
0	-15	1118	17568	24785	978	15210	21090	932	14437	19912	886	13670	18760	839	12908	17633
0	-10	1127	17545	24861	988	15211	21180	942	14446	20006	895	13685	18856	849	12931	17732
0	-5	1137	17538	24990	997	15224	21310	951	14464	20135	904	13710	18986	858	12962	17863
0	0	1146	17534	25130	1006	15238	21447	960	14485	20273	914	13738	19125	867	12995	18001
	5	1155	18092	26124	1016	15738	22304	969	14965	21085	923	14199	19894	876	13437	18728
	10	1164	19081	27798	1025	16608	23730	978	15796	22432	932	14992	21165	885	14193	19926



Figure 4-24 (Sheet 3 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
1000 FEET

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-25	1087	16324	23016	947	14081	19523	901	13345	18408	854	12614	17318	808	11889	16253
3	-20	1096	16310	23113	957	14089	19627	910	13359	18514	864	12635	17426	818	11917	16364
5	-15	1105	16288	23185	966	14090	19711	920	13368	18603	873	12650	17518	827	11939	16459
0	-10	1115	16268	23259	976	14091	19796	929	13375	18690	883	12665	17609	836	11959	16552
0	-5	1124	16261	23380	985	14102	19918	938	13392	18812	892	12688	17732	845	11988	16674
0	0	1133	16256	23511	994	14115	20047	947	13411	18942	901	12713	17861	855	12020	16805
	5	1142	16752	24413	1003	14560	20825	956	13839	19679	910	13124	18560	864	12414	17466
	10	1151	17629	25926	1012	15332	22113	965	14577	20896	919	13829	19708	872	13085	18546
1	-25	1074	15138	21531	935	13044	18245	889	12357	17197	842	11673	16171	796	10994	15169
3	-20	1084	15125	21622	944	13051	18342	898	12369	17296	852	11693	16273	805	11020	15272
0	-15	1093	15106	21693	954	13052	18423	907	12377	17380	861	11707	16360	815	11041	15362
0	-10	1102	15087	21763	963	13053	18503	917	12385	17463	870	11720	16445	824	11061	15451
0	-5	1111	15079	21876	972	13063	18617	926	12401	17578	879	11742	16561	833	11088	15567
	0	1120	15074	21999	981	13075	18739	935	12418	17700	888	11764	16681	842	11116	15688
	5	1129	15516	22820	990	13472	19446	943	12799	18369	897	12132	17318	851	11469	16289
	10	1138	16295	24189	999	14158	20611	952	13456	19471	906	12759	18357	859	12066	17267
1	-25	1073	13979	19963	934	12051	16930	887	11416	15962	841	10786	15015	794	10160	14089
2	-20	1082	13967	20049	943	12057	17021	897	11429	16055	850	10804	15109	804	10184	14185
5	-15	1092	13949	20112	952	12057	17093	906	11436	16131	860	10818	15189	813	10203	14267
0	-10	1101	13931	20174	962	12059	17166	915	11442	16205	869	10830	15266	823	10222	14348
0	-5	1110	13924	20279	971	12068	17272	924	11457	16312	878	10850	15373	831	10246	14454
	0	1119	13920	20395	980	12080	17387	933	11473	16425	887	10871	15486	840	10272	14567
	5	1127	14313	21138	988	12432	18025	942	11813	17032	895	11198	16061	849	10586	15110
	10	1136	15004	22371	996	13041	19074	950	12396	18024	904	11755	16996	857	11117	15991
1	-25	1082	12887	18390	942	11130	15635	896	10551	14755	850	9977	13895	803	9404	13051
2	-20	1091	12876	18467	952	11136	15717	905	10562	14838	859	9992	13978	812	9425	13137
0	-15	1101	12860	18523	961	11136	15781	915	10569	14906	868	10004	14049	822	9443	13211
0	-10	1110	12843	18578	971	11138	15847	924	10575	14974	878	10016	14119	831	9460	13284
0	-5	1119	12837	18673	980	11146	15942	933	10588	15069	887	10034	14215	840	9482	13379
	0	1128	12833	18777	989	11156	16045	942	10602	15170	896	10053	14317	849	9506	13481
	5	1136	13181	19439	997	11469	16615	951	10906	15714	904	10344	14831	858	9787	13968
	10	1145	13791	20534	1006	12010	17551	959	11423	16598	913	10840	15667	866	10259	14755
1	-25	1091	11907	16962	952	10303	14459	905	9773	13657	859	9247	12874	812	8723	12107
1	-20	1100	11897	17030	961	10308	14532	915	9784	13733	868	9262	12950	822	8744	12185
5	-15	1110	11883	17081	971	10309	14590	924	9789	13793	878	9274	13014	831	8759	12250
0	-10	1120	11868	17130	980	10309	14647	934	9796	13854	887	9284	13076	841	8776	12316
0	-5	1129	11862	17214	989	10317	14733	943	9807	13939	897	9301	13163	850	8796	12402
	0	1138	11858	17307	998	10325	14823	952	9820	14030	906	9318	13254	859	8817	12492
	5	1146	12168	17898	1007	10607	15336	961	10092	14517	914	9579	13715	868	9070	12931
	10	1155	12711	18876	1016	11089	16173	969	10554	15309	923	10023	14465	876	9493	13637
1	-25	1101	11022	15660	961	9553	13383	915	9068	12654	869	8587	11942	822	8106	11243
1	-20	1110	11013	15721	971	9558	13449	924	9077	12721	878	8600	12010	832	8125	11313
0	-15	1120	11000	15765	981	9559	13500	934	9083	12775	888	8610	12066	841	8139	11371
0	-10	1130	10987	15809	990	9559	13550	944	9089	12829	897	8620	12121	851	8154	11429
0	-5	1139	10981	15883	999	9566	13627	953	9099	12905	907	8635	12198	860	8172	11505
	0	1148	10977	15965	1008	9573	13707	962	9111	12986	916	8650	12279	869	8191	11586
	5	1157	11256	16497	1017	9827	14169	971	9356	13425	924	8886	12695	878	8420	11982
	10	1165	11741	17372	1026	10261	14921	979	9771	14136	933	9286	13370	887	8802	12619



Figure 4-24 (Sheet 4 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
2000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-25	1176	24784	33453	1036	21529	28584	990	20467	27032	943	19415	25514	897	18374	24030
	-20	1186	24778	33596	1047	21553	28738	1000	20499	27189	954	19457	25674	907	18425	24194
	-15	1196	24745	33697	1057	21553	28857	1011	20510	27313	964	19478	25804	918	18456	24329
	-10	1206	24763	33880	1067	21595	29043	1021	20560	27501	974	19535	25992	928	18521	24517
	-5	1217	24943	34333	1077	21775	29453	1031	20741	27898	984	19716	26376	938	18702	24889
	0	1227	25154	34836	1087	21983	29907	1041	20947	28335	994	19921	26798	948	18906	25296
	5	1236	27328	38094	1097	23881	32683	1051	22757	30961	1004	21644	29276	958	20544	27632
	10	1246	29920	41998	1107	26137	36000	1061	24906	34094	1014	23688	32231	968	22485	30414
	-25	1166	23673	32159	1027	20555	27460	981	19536	25962	934	18527	24497	888	17528	23064
	-20	1177	23668	32299	1038	20578	27610	991	19567	26114	945	18567	24652	898	17577	23223
1 5 0 0	-15	1187	23638	32399	1048	20578	27726	1001	19577	26235	955	18587	24778	908	17606	23353
	-10	1197	23654	32576	1058	20617	27906	1011	19624	26416	965	18642	24960	919	17668	23536
	-5	1207	23819	33005	1068	20785	28296	1021	19792	26793	975	18810	25325	929	17838	23890
	0	1217	24014	33482	1078	20977	28726	1031	19984	27209	985	19001	25726	938	18027	24276
	5	1227	26026	36532	1088	22735	31324	1041	21660	29665	995	20597	28045	948	19544	26460
	10	1237	28412	40168	1097	24812	34413	1051	23640	32583	1004	22479	30795	958	21333	29052
	-25	1153	21921	30071	1014	19020	25654	967	18071	24245	921	17131	22867	875	16200	21520
	-20	1163	21915	30204	1024	19041	25796	978	18100	24390	931	17168	23014	885	16245	21670
	-15	1173	21888	30302	1034	19042	25908	988	18111	24507	941	17187	23135	895	16273	21795
	-10	1183	21901	30468	1044	19077	26076	998	18153	24676	951	17237	23305	905	16329	21965
1 4 0 0	-5	1193	22046	30861	1054	19225	26433	1007	18301	25020	961	17386	23639	915	16480	22289
	0	1203	22215	31294	1064	19394	26825	1017	18470	25399	971	17555	24005	924	16648	22642
	5	1213	23984	34026	1073	20941	29152	1027	19946	27599	981	18961	26082	934	17985	24599
	10	1222	26064	37257	1083	22755	31899	1036	21675	30193	990	20606	28528	944	19549	26903
	-25	1141	20294	28091	1002	17599	23948	956	16716	22626	909	15841	21333	863	14973	20068
	-20	1151	20288	28217	1012	17617	24081	966	16742	22762	919	15874	21470	873	15015	20210
	-15	1161	20263	28311	1022	17619	24189	976	16752	22873	929	15893	21586	883	15041	20327
	-10	1171	20275	28467	1032	17651	24347	985	16790	23030	939	15938	21745	893	15093	20487
	-5	1181	20401	28826	1042	17781	24673	995	16922	23347	949	16071	22051	902	15226	20783
	0	1191	20550	29222	1051	17930	25030	1005	17072	23693	959	16222	22387	912	15377	21107
1 3 0 0	5	1200	22106	31668	1061	19294	27116	1014	18372	25663	968	17460	24245	922	16557	22860
	10	1210	23922	34541	1070	20879	29558	1024	19885	27972	977	18900	26422	931	17925	24909
	-25	1129	18805	26264	990	16296	22372	944	15473	21130	897	14657	19915	851	13848	18727
	-20	1139	18799	26383	1000	16312	22497	954	15497	21258	907	14688	20045	861	13886	18859
	-15	1149	18776	26473	1010	16314	22599	963	15506	21362	917	14705	20153	871	13911	18971
	-10	1159	18786	26619	1020	16343	22747	973	15541	21511	927	14747	20303	880	13957	19120
	-5	1168	18896	26947	1029	16458	23046	983	15659	21802	936	14865	20584	890	14078	19393
	0	1178	19027	27310	1039	16591	23375	992	15791	22118	946	14999	20891	900	14213	19690
	5	1187	20401	29508	1048	17796	25248	1002	16942	23890	955	16095	22562	909	15256	21265
	10	1197	21993	32074	1058	19189	27431	1011	18270	25951	965	17361	24506	918	16458	23094
1 2 0 0	-25	1117	17436	24569	978	15097	20910	932	14330	19743	885	13567	18599	839	12811	17482
	-20	1127	17430	24681	988	15112	21028	941	14350	19861	895	13596	18722	848	12846	17606
	-15	1137	17410	24769	997	15113	21124	951	14360	19962	905	13613	18826	858	12870	17713
	-10	1146	17417	24905	1007	15140	21264	961	14392	20101	914	13649	18963	868	12913	17852
	-5	1156	17515	25208	1017	15243	21540	970	14496	20368	924	13756	19223	877	13021	18104
	0	1165	17630	25540	1026	15360	21840	980	14616	20661	933	13875	19505	887	13142	18377
	5	1175	18847	27522	1035	16428	23529	989	15635	22256	943	14849	21012	896	14067	19795
	10	1184	20247	29820	1045	17656	25485	998	16806	24103	952	15964	22754	905	15128	21435



Figure 4-24 (Sheet 5 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
2000 FEET

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-25	1105	16174	22993	966	13990	19549	919	13273	18450	873	12561	17375	826	11853	16323
3	-20	1115	16168	23099	975	14003	19660	929	13293	18563	883	12587	17490	836	11886	16440
5	-15	1124	16148	23181	985	14006	19753	939	13302	18658	892	12603	17588	846	11909	16542
0	-10	1134	16155	23310	994	14029	19882	948	13331	18789	902	12637	17718	855	11948	16672
0	-5	1143	16241	23588	1004	14121	20136	958	13425	19035	911	12732	17957	865	12046	16904
0	0	1153	16343	23894	1013	14226	20413	967	13530	19302	920	12839	18216	874	12153	17154
	5	1162	17423	25684	1022	15175	21939	976	14437	20745	930	13705	19578	883	12976	18435
	10	1171	18659	27750	1031	16258	23695	985	15471	22404	939	14690	21142	892	13914	19908
1	-25	1093	15005	21519	953	12965	18278	907	12294	17243	860	11628	16231	814	10966	15242
3	-20	1102	14998	21618	963	12977	18382	916	12312	17349	870	11652	16339	824	10997	15352
0	-15	1112	14982	21699	972	12979	18469	926	12321	17439	879	11667	16432	833	11018	15447
0	-10	1121	14986	21818	982	13001	18592	935	12347	17561	889	11699	16554	842	11054	15569
0	-5	1130	15062	22075	991	13083	18826	945	12432	17789	898	11784	16774	852	11142	15783
	0	1140	15153	22357	1000	13176	19081	954	12526	18035	907	11880	17013	861	11239	16014
	5	1149	16114	23978	1009	14021	20461	963	13334	19341	916	12650	18244	870	11972	17173
	10	1157	17207	25839	1018	14981	22044	972	14250	20835	925	13524	19654	879	12804	18500
1	-25	1096	13840	19889	956	11971	16918	910	11356	15970	863	10744	15041	817	10137	14134
2	-20	1105	13834	19981	966	11982	17015	919	11372	16067	873	10766	15140	826	10164	14234
5	-15	1115	13818	20053	975	11984	17094	929	11380	16149	882	10780	15225	836	10184	14321
0	-10	1124	13821	20160	985	12003	17204	938	11403	16258	892	10809	15336	846	10217	14432
0	-5	1134	13888	20389	994	12075	17413	948	11478	16462	901	10885	15533	855	10295	14623
	0	1143	13966	20639	1004	12158	17641	957	11562	16683	911	10971	15747	865	10383	14832
	5	1152	14818	22091	1012	12907	18878	966	12279	17854	920	11655	16852	873	11034	15871
	10	1160	15780	23749	1021	13755	20292	975	13089	19189	928	12426	18110	882	11770	17057
1	-25	1105	12769	18327	965	11064	15627	919	10503	14765	872	9944	13921	826	9389	13095
2	-20	1114	12763	18409	975	11074	15714	928	10517	14852	882	9964	14010	836	9414	13185
0	-15	1124	12749	18474	984	11075	15784	938	10525	14926	892	9977	14086	845	9431	13262
0	-10	1133	12751	18570	994	11093	15884	948	10546	15025	901	10002	14184	855	9462	13363
0	-5	1143	12810	18774	1004	11158	16071	957	10613	15207	911	10072	14363	864	9532	13535
	0	1152	12880	18997	1013	11232	16275	967	10689	15406	920	10148	14554	874	9611	13722
	5	1161	13634	20289	1022	11899	17381	976	11327	16451	929	10758	15542	883	10193	14653
	10	1170	14484	21761	1031	12648	18636	984	12043	17638	938	11443	16663	891	10846	15710
1	-25	1114	11806	16907	975	10249	14454	928	9734	13668	882	9224	12901	836	8716	12149
5	-20	1124	11801	16980	984	10257	14530	938	9748	13747	892	9242	12980	845	8737	12228
0	-15	1133	11787	17036	994	10259	14594	948	9755	13813	901	9253	13047	855	8754	12298
0	-10	1143	11790	17123	1004	10274	14681	957	9773	13900	911	9276	13136	865	8782	12388
	-5	1153	11843	17306	1014	10333	14850	967	9834	14064	921	9339	13296	874	8845	12543
	0	1163	11906	17506	1023	10399	15033	977	9903	14243	930	9408	13468	884	8917	12711
	5	1171	12578	18661	1032	10997	16024	986	10475	15181	939	9956	14356	893	9440	13549
	10	1180	13333	19971	1041	11665	17145	994	11114	16241	948	10568	15359	902	10025	14496
1	-25	1124	10935	15610	985	9509	13379	938	9037	12664	892	8569	11965	846	8103	11281
1	-20	1134	10930	15675	995	9517	13448	948	9049	12734	902	8585	12036	855	8123	11352
0	-15	1144	10918	15725	1004	9517	13502	958	9056	12793	912	8596	12096	865	8138	11414
0	-10	1153	10919	15800	1014	9531	13581	968	9073	12871	921	8616	12174	875	8163	11494
	-5	1163	10967	15964	1024	9585	13733	978	9129	13019	931	8674	12319	885	8222	11634
	0	1173	11024	16144	1034	9646	13898	987	9190	13178	941	8738	12475	894	8286	11784
	5	1182	11629	17181	1043	10184	14789	996	9706	14023	950	9232	13274	903	8759	12540
	10	1191	12304	18353	1051	10783	15794	1005	10281	14976	959	9783	14177	912	9285	13392



Figure 4-24 (Sheet 6 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
3000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1184	24521	33122	1045	21328	28339	998	20284	26812	952	19252	25320	905	18229	23861
6	-25	1195	24569	33335	1055	21396	28551	1009	20361	27026	963	19335	25534	916	18319	24074
3	-20	1205	24575	33519	1066	21430	28739	1020	20403	27215	973	19385	25723	927	18378	24265
0	-15	1216	24576	33702	1076	21457	28924	1030	20438	27399	984	19430	25910	937	18430	24451
0	-10	1226	24867	34340	1087	21735	29491	1040	20711	27944	994	19698	26432	948	18695	24954
0	-5	1236	25345	35284	1097	22173	30315	1051	21137	28731	1004	20110	27181	958	19095	25667
0	0	1247	26657	37370	1107	23329	32104	1061	22244	30427	1014	21169	28787	968	20106	27186
0	5	1257	29516	41588	1117	25819	35695	1071	24616	33821	1024	23425	31990	978	22249	30204
0	10	1266	33141	46908	1127	28964	40210	1081	27607	38084	1034	26267	36010	988	24944	33986
1	-30	1175	23432	31854	1036	20370	27235	989	19369	25761	943	18378	24320	896	17396	22910
6	-25	1185	23475	32058	1046	20434	27439	1000	19441	25967	953	18456	24525	907	17481	23116
3	-20	1196	23481	32237	1057	20466	27621	1010	19480	26148	964	18504	24708	917	17536	23299
0	-15	1206	23481	32414	1067	20492	27801	1021	19515	26329	974	18546	24888	928	17587	23480
0	-10	1217	23752	33020	1077	20750	28338	1031	19769	26845	984	18796	25384	938	17833	23956
0	-5	1227	24194	33912	1087	21156	29116	1041	20163	27587	995	19180	26092	948	18206	24631
0	0	1237	25408	35868	1098	22229	30796	1051	21190	29179	1005	20162	27599	958	19143	26055
0	5	1247	28042	39797	1108	24524	34141	1061	23377	32341	1015	22243	30584	968	21120	28867
0	10	1257	31359	44721	1117	27403	38320	1071	26116	36287	1024	24845	34303	978	23590	32369
1	-30	1162	21694	29772	1023	18849	25435	977	17918	24051	930	16995	22697	884	16081	21374
5	-25	1173	21736	29969	1033	18908	25629	987	17984	24246	941	17068	22892	894	16159	21567
5	-20	1183	21739	30136	1044	18937	25801	997	18019	24416	951	17111	23063	904	16209	21739
0	-15	1193	21738	30303	1054	18960	25969	1008	18051	24586	961	17149	23232	915	16256	21909
0	-10	1203	21976	30855	1064	19188	26459	1018	18276	25057	971	17371	23685	925	16475	22344
0	-5	1213	22365	31663	1074	19548	27166	1028	18626	25732	981	17711	24328	935	16806	22957
0	0	1223	23440	33437	1084	20497	28686	1037	19534	27172	991	18581	25692	944	17635	24244
0	5	1231	25761	36979	1092	22519	31698	1046	21461	30018	999	20413	28375	953	19376	26772
0	10	1240	28657	41381	1101	25034	35431	1054	23853	33539	1008	22686	31694	961	21531	29892
1	-30	1150	20096	27829	1011	17450	23757	965	16583	22458	918	15723	21186	872	14871	19943
5	-25	1161	20132	28012	1021	17503	23938	975	16642	22638	929	15789	21367	882	14942	20123
0	-20	1171	20135	28170	1032	17529	24099	985	16675	22799	939	15829	21529	892	14988	20284
0	-15	1181	20132	28325	1042	17550	24257	995	16703	22957	949	15864	21687	902	15030	20443
0	-10	1191	20342	28829	1052	17753	24706	1005	16903	23388	959	16062	22101	913	15227	20842
0	-5	1201	20686	29564	1062	18071	25348	1015	17213	24001	969	16363	22685	922	15520	21398
0	0	1210	21631	31157	1071	18907	26713	1025	18015	25296	978	17130	23910	932	16254	22557
0	5	1219	23661	34310	1079	20677	29394	1033	19702	27829	987	18736	26300	940	17778	24805
0	10	1226	26176	38212	1087	22863	32702	1041	21782	30950	994	20712	29240	948	19653	27570
1	-30	1138	18630	26031	999	16166	22205	953	15358	20984	906	14555	19788	860	13760	18620
4	-25	1148	18661	26201	1009	16214	22374	963	15412	21153	916	14615	19957	870	13825	18788
5	-20	1159	18664	26352	1019	16237	22525	973	15441	21303	926	14651	20108	880	13868	18939
0	-15	1169	18662	26499	1029	16255	22672	983	15467	21452	936	14683	20256	890	13906	19088
0	-10	1179	18847	26960	1039	16436	23083	993	15645	21846	946	14860	20636	900	14082	19453
0	-5	1188	19150	27628	1049	16718	23668	1003	15921	22405	956	15129	21169	910	14344	19961
0	0	1198	19986	29065	1058	17458	24900	1012	16630	23572	965	15808	22274	919	14993	21005
0	5	1206	21766	31880	1067	19014	27295	1020	18112	25834	974	17219	24407	927	16333	23012
0	10	1213	23953	35335	1074	20916	30225	1028	19924	28599	981	18940	27011	935	17967	25461
1	-30	1126	17282	24364	987	14983	20764	940	14228	19614	894	13479	18490	848	12736	17390
4	-25	1136	17310	24524	997	15027	20922	950	14277	19772	904	13534	18648	858	12796	17548
0	-20	1146	17311	24664	1007	15048	21064	960	14304	19913	914	13567	18789	868	12835	17690
0	-15	1156	17308	24802	1017	15065	21203	970	14328	20054	924	13597	18930	878	12871	17830
0	-10	1166	17473	25226	1027	15226	21580	980	14487	20415	934	13755	19277	887	13028	18164
0	-5	1176	17743	25837	1036	15477	22114	990	14733	20926	943	13994	19764	897	13262	18629
0	0	1185	18482	27135	1045	16133	23227	999	15362	21981	952	14597	20763	906	13838	19572
0	5	1193	20050	29658	1054	17505	25375	1007	16669	24008	961	15842	22675	914	15021	21371
0	10	1200	21959	32730	1061	19167	27979	1014	18253	26467	968	17347	24990	922	16450	23548



Figure 4-24 (Sheet 7 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
3000 FEET

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1114	16038	22811	975	13891	19421	928	13185	18339	882	12485	17281	835	11789	16245
3	-25	1124	16062	22960	984	13930	19569	938	13230	18487	892	12535	17428	845	11843	16391
5	-20	1134	16063	23092	994	13949	19701	948	13255	18620	901	12565	17561	855	11880	16525
0	-15	1143	16059	23222	1004	13964	19832	958	13276	18751	911	12592	17692	865	11913	16657
0	-10	1153	16205	23610	1014	14108	20179	967	13419	19084	921	12734	18012	874	12054	16964
0	-5	1163	16445	24170	1023	14332	20668	977	13638	19551	930	12948	18457	884	12264	17389
0	0	1171	17100	25345	1032	14915	21676	986	14198	20507	939	13484	19362	893	12777	18244
0	5	1180	18487	27615	1040	16127	23605	994	15354	22329	947	14585	21080	901	13823	19860
0	10	1187	20160	30357	1047	17585	25930	1001	16742	24521	955	15906	23146	908	15076	21801
1	-30	1101	14884	21357	962	12878	18165	916	12218	17146	869	11562	16149	823	10911	15174
3	-25	1111	14906	21497	972	12914	18304	925	12258	17284	879	11608	16287	833	10962	15313
5	-20	1121	14906	21621	982	12931	18428	935	12281	17409	889	11636	16412	842	10995	15437
0	-15	1130	14902	21744	991	12945	18552	945	12301	17532	898	11661	16535	852	11025	15560
0	-10	1140	15032	22101	1001	13074	18871	954	12429	17839	908	11789	16830	861	11152	15843
0	-5	1149	15245	22613	1010	13274	19318	964	12625	18266	917	11980	17237	871	11341	16233
0	0	1158	15829	23681	1019	13793	20234	973	13124	19135	926	12459	18060	880	11798	17008
0	5	1166	17056	25726	1027	14867	21972	980	14148	20776	934	13434	19606	888	12726	18464
0	10	1173	18527	28181	1034	16150	24053	988	15371	22739	941	14596	21454	895	13829	20201
1	-30	1108	13714	19682	969	11885	16777	923	11283	15849	876	10684	14940	830	10089	14051
2	-25	1118	13736	19817	978	11918	16906	932	11320	15977	886	10725	15067	839	10133	14177
5	-20	1127	13734	19927	988	11933	17019	942	11340	16089	895	10750	15180	849	10164	14290
0	-15	1137	13730	20036	998	11945	17128	952	11358	16200	905	10773	15291	859	10192	14401
0	-10	1147	13846	20357	1008	12060	17415	961	11471	16475	915	10887	15556	868	10305	14656
0	-5	1156	14034	20815	1017	12238	17817	971	11646	16859	924	11058	15923	878	10473	15006
0	0	1163	14560	21806	1024	12703	18661	977	12091	17657	931	11484	16676	884	10880	15716
0	5	1165	15666	23723	1026	13665	20279	980	13007	19181	933	12352	18107	887	11703	17058
0	10	1164	17008	26080	1025	14822	22254	978	14103	21035	932	13390	19844	885	12681	18680
1	-30	1118	12663	18146	978	10992	15503	932	10443	14660	885	9895	13832	839	9351	13023
2	-25	1127	12680	18264	988	11022	15620	941	10474	14773	895	9931	13946	848	9390	13136
5	-20	1137	12679	18364	998	11035	15720	951	10493	14875	905	9954	14047	858	9418	13237
0	-15	1147	12675	18461	1007	11045	15817	961	10509	14974	915	9975	14147	868	9443	13337
0	-10	1156	12776	18746	1017	11148	16074	971	10611	15220	924	10077	14384	878	9546	13566
0	-5	1166	12944	19156	1027	11307	16435	980	10767	15565	934	10230	14713	887	9696	13880
0	0	1172	13406	20035	1033	11717	17186	987	11161	16276	940	10607	15385	894	10057	14515
0	5	1175	14375	21732	1036	12562	18621	989	11964	17627	943	11371	16656	896	10781	15706
0	10	1173	15533	23799	1034	13563	20355	988	12915	19258	941	12271	18184	895	11632	17137
1	-30	1127	11715	16745	988	10188	14343	942	9685	13575	895	9183	12822	849	8685	12085
1	-25	1137	11730	16850	998	10214	14447	951	9713	13677	905	9216	12924	858	8720	12186
5	-20	1147	11729	16939	1008	10226	14536	961	9730	13767	915	9237	13015	868	8745	12276
0	-15	1157	11725	17025	1018	10236	14624	971	9744	13855	925	9255	13103	878	8768	12366
0	-10	1167	11817	17282	1027	10327	14853	981	9836	14077	934	9347	13316	888	8861	12572
0	-5	1176	11966	17648	1037	10470	15176	990	9976	14386	944	9485	13612	898	8997	12855
0	0	1183	12376	18433	1044	10836	15849	997	10327	15023	951	9822	14215	904	9319	13423
0	5	1185	13230	19942	1046	11582	17127	999	11038	16227	953	10498	15348	907	9961	14488
0	10	1183	14238	21765	1044	12457	18662	998	11870	17671	951	11286	16702	905	10706	15755
1	-30	1138	10858	15465	998	9458	13280	952	8996	12581	906	8537	11896	859	8079	11225
1	-25	1147	10869	15557	1008	9480	13371	961	9021	12671	915	8565	11986	869	8111	11315
5	-20	1157	10868	15636	1018	9491	13451	971	9036	12751	925	8584	12067	879	8134	11396
0	-15	1167	10865	15713	1028	9500	13529	982	9050	12831	935	8601	12146	889	8155	11476
0	-10	1177	10947	15942	1038	9583	13736	991	9132	13029	945	8685	12338	899	8239	11661
0	-5	1187	11081	16270	1048	9712	14026	1001	9259	13307	955	8810	12604	908	8361	11914
0	0	1194	11448	16975	1054	10039	14629	1008	9575	13880	961	9111	13145	915	8651	12427
0	5	1196	12206	18323	1056	10703	15773	1010	10208	14959	964	9715	14162	917	9224	13381
0	10	1194	13092	19943	1055	11474	17139	1008	10940	16243	962	10410	15368	915	9882	14511



Figure 4-24 (Sheet 8 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-30	1203	23982	32602	1064	20915	27965	1018	19913	26485	971	18920	25036	925	17937	23620
	-25	1214	24066	32873	1075	21015	28226	1029	20018	26743	982	19029	25291	936	18051	23872
	-20	1225	24232	33300	1086	21185	28617	1039	20188	27121	993	19202	25660	947	18225	24230
	-15	1236	24427	33776	1096	21379	29048	1050	20383	27540	1004	19396	26064	957	18419	24621
	-10	1246	25460	35535	1107	22297	30561	1061	21264	28975	1014	20241	27424	968	19228	25908
	-5	1257	26596	37491	1117	23304	32239	1071	22230	30566	1025	21167	28931	978	20114	27333
	0	1267	29165	41325	1128	25548	35511	1081	24368	33660	1035	23203	31854	988	22050	30090
	5	1277	32696	46496	1138	28616	39909	1091	27289	37816	1045	25980	35776	999	24687	33785
	10	1287	37308	53196	1148	32605	45587	1101	31080	43174	1055	29578	40825	1009	28096	38535
	15	1297	43000	61800	1158	37600	53200	1111	35070	50260	1065	33170	47870	1019	31600	44580
1 5 0 0	-30	1194	22929	31374	1055	19986	26892	1008	19023	25461	962	18070	24061	916	17126	22693
	-25	1205	23007	31634	1066	20080	27143	1019	19122	25709	973	18173	24306	926	17233	22934
	-20	1216	23162	32042	1076	20238	27516	1030	19283	26072	983	18335	24658	937	17397	23276
	-15	1226	23343	32495	1087	20420	27927	1040	19464	26470	994	18517	25044	948	17579	23650
	-10	1237	24304	34154	1097	21274	29353	1051	20285	27823	1004	19303	26325	958	18333	24863
	-5	1247	25357	35994	1108	22210	30933	1061	21181	29319	1015	20164	27744	968	19155	26202
	0	1257	27724	39568	1118	24279	33983	1071	23155	32206	1025	22043	30469	979	20944	28775
	5	1267	30955	44355	1128	27089	38056	1082	25832	36056	1035	24588	34102	989	23360	32196
	10	1277	35139	50507	1138	30713	43273	1091	29276	40978	1045	27859	38742	999	26460	36562
	15	1287	40800	58200	1148	35200	50000	1101	33170	47870	1055	31600	44580	1019	31600	44580
1 5 5 0 0	-30	1182	21235	29325	1043	18502	25120	996	17606	23776	950	16719	22462	904	15839	21177
	-25	1193	21306	29571	1053	18585	25354	1007	17695	24008	961	16813	22692	914	15937	21403
	-20	1203	21442	29944	1064	18727	25697	1018	17839	24342	971	16957	23014	925	16084	21717
	-15	1214	21602	30359	1074	18888	26073	1028	18000	24706	982	17120	23368	935	16246	22059
	-10	1224	22450	31856	1085	19645	27362	1038	18727	25929	992	17817	24526	946	16915	23155
	-5	1234	23377	33513	1095	20470	28784	1049	19519	27277	1002	18576	25803	956	17643	24364
	0	1242	25477	36768	1103	22303	31556	1057	21266	29897	1010	20239	28275	964	19223	26692
	5	1250	28314	41082	1111	24768	35219	1065	23613	33356	1018	22469	31535	972	21339	29760
	10	1260	31892	46449	1121	27873	39773	1074	26565	37654	1028	25274	35588	982	23999	33573
	15	1270	36600	53800	1131	31600	45000	1084	30070	43870	1038	28580	40870	992	27000	38000
1 4 0 0	-30	1170	19687	27437	1031	17142	23484	984	16307	22220	938	15480	20985	892	14660	19778
	-25	1180	19748	27663	1041	17217	23701	995	16388	22437	948	15564	21197	902	14748	19987
	-20	1191	19870	28009	1052	17344	24018	1005	16516	22743	959	15695	21497	912	14880	20277
	-15	1201	20011	28389	1062	17488	24364	1016	16661	23079	969	15840	21821	923	15027	20592
	-10	1211	20763	29745	1072	18160	25531	1026	17307	24187	979	16460	22871	933	15621	21585
	-5	1222	21582	31241	1082	18889	26815	1036	18007	25403	989	17132	24023	943	16266	22675
	0	1230	23419	34141	1090	20494	29284	1044	19538	27738	997	18590	26226	951	17651	24749
	5	1237	25881	37962	1098	22637	32530	1051	21578	30802	1005	20529	29114	958	19491	27467
	10	1243	29033	42838	1103	25365	36653	1057	24170	34688	1011	22989	32772	964	21821	30903
	15	1250	32800	49000	1111	28600	42000	1065	27070	40870	1018	25580	37070	972	24800	36000
1 4 5 0 0	-30	1158	18266	25688	1019	15893	21968	972	15114	20780	926	14342	19618	879	13574	18479
	-25	1168	18320	25899	1029	15961	22171	982	15186	20980	936	14418	19815	890	13656	18676
	-20	1178	18427	26216	1039	16074	22463	993	15302	21264	946	14535	20090	900	13774	18942
	-15	1189	18554	26568	1049	16203	22782	1003	15432	21574	957	14666	20390	910	13906	19233
	-10	1199	19222	27800	1059	16800	23841	1013	16007	22579	967	15219	21344	920	14437	20136
	-5	1209	19947	29153	1069	17448	25004	1023	16629	23681	977	15816	22387	930	15009	21122
	0	1216	21558	31745	1077	18858	27212	1031	17974	25768	984	17097	24356	938	16228	22977
	5	1224	23700	35131	1084	20723	30087	1038	19750	28482	992	18787	26916	945	17831	25384
	10	1229	26413	39414	1090	23075	33710	1044	21986	31898	997	20907	30128	951	19841	28402
	15	1235	30200	45000	1100	26000	39000	1055	24800	37800	1005	23800	35800	960	22800	33800
1 0 0	-30	1145	16955	24061	1006	14740	20558	960	14013	19440	913	13290	18344	867	12573	17273
	-25	1156	17004	24258	1016	14801	20746	970	14078	19625	923	13359	18527	877	12646	17454
	-20	1166	17100	24552	1027	14904	21017	980	14182	19888	934	13466	18784	887	12754	17702
	-15	1176	17212	24876	1037	15020	21313	990	14299	20174	944	13584	19061	897	12873	17971
	-10	1186	17807	25997	1047	15553	22277	1000	14812	21089	954	14078	19928	907	13348	18792
	-5	1196	18451	27225	1056	16128	23331	1010	15366	22090	964	14610	20876	917	13858	19688
	0	1203	19871	29551	1064	17372	25312	1018	16553	23962	971	15739	22641	925	14933	21351
	5	1210	21740	32562	1071	19002	27870	1025	18106	26377	978	17216	24916	932	16335	23491
	10	1216	24086	36338	1076	21036	31062	1030	20040	29386	984	19053	27749	937	18075	26151
	15	1222	27000	41000	1084	23600	35600	1038	22070	33070	992	20970	30670	945	20800	32800



Figure 4-24 (Sheet 9 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1133	15745	22544	994	13675	19243	947	12994	18189	901	12318	17157	854	11646	16147
3	-25	1143	15787	22726	1004	13730	19419	957	13052	18361	911	12381	17328	864	11713	16316
5	-20	1153	15873	22998	1014	13821	19668	967	13146	18604	921	12477	17564	874	11810	16545
0	-15	1163	15973	23298	1024	13925	19941	977	13252	18869	931	12583	17820	884	11918	16794
0	-10	1173	16505	24321	1033	14402	20821	987	13711	19704	941	13025	18611	894	12343	17542
0	-5	1182	17077	25437	1043	14916	21781	997	14206	20614	950	13500	19473	904	12800	18358
0	0	1190	18333	27532	1051	16015	23562	1004	15254	22297	958	14500	21062	911	13750	19853
0	5	1197	19971	30220	1058	17445	25846	1011	16616	24452	965	15795	23092	918	14980	21762
0	10	1202	22007	33562	1063	19213	28672	1016	18298	27116	970	17392	25598	923	16492	24115
1	-30	1122	14607	21081	983	12677	17982	937	12042	16993	890	11410	16023	844	10783	15076
3	-25	1132	14649	21261	992	12728	18152	946	12096	17159	900	11469	16188	853	10844	15237
5	-20	1142	14724	21509	1003	12811	18382	956	12180	17382	910	11555	16405	863	10933	15448
0	-15	1152	14812	21782	1013	12904	18632	966	12275	17624	920	11651	16640	873	11030	15676
0	-10	1161	15289	22722	1022	13332	19438	976	12688	18390	929	12048	17365	883	11412	16362
0	-5	1170	15803	23747	1031	13792	20317	985	13130	19223	938	12473	18153	892	11820	17107
0	0	1176	16923	25662	1037	14771	21943	991	14065	20759	944	13362	19599	898	12665	18467
0	5	1183	18363	28070	1044	16029	23987	997	15262	22686	951	14502	21416	905	13747	20175
0	10	1188	20138	31041	1049	17571	26498	1002	16729	25053	956	15895	23642	910	15067	22264
1	-30	1131	13467	19419	992	11708	16603	945	11128	15702	899	10552	14821	853	9980	13959
2	-25	1141	13502	19579	1001	11752	16754	955	11176	15851	908	10603	14967	862	10034	14103
5	-20	1151	13568	19800	1012	11826	16959	965	11251	16050	919	10681	15162	872	10113	14292
0	-15	1161	13646	20044	1022	11908	17182	975	11335	16267	929	10767	15373	882	10200	14496
0	-10	1170	14066	20878	1031	12287	17901	985	11701	16950	938	11118	16019	892	10539	15109
0	-5	1180	14517	21786	1040	12692	18681	994	12091	17690	947	11493	16719	901	10900	15772
0	0	1178	15535	23619	1039	13573	20221	992	12927	19137	946	12286	18077	900	11649	17042
0	5	1174	16863	25983	1035	14715	22198	988	14009	20992	942	13308	19814	895	12611	18662
0	10	1174	18450	28738	1035	16086	24512	988	15309	23167	942	14539	21853	895	13775	20571
1	-30	1141	12447	17913	1001	10839	15350	955	10309	14531	908	9782	13728	862	9258	12943
2	-25	1150	12476	18054	1011	10879	15486	964	10351	14663	918	9828	13860	872	9307	13072
5	-20	1160	12535	18252	1021	10944	15669	975	10419	14843	928	9897	14034	882	9378	13242
0	-15	1171	12604	18469	1031	11017	15868	985	10495	15037	939	9975	14223	892	9456	13425
0	-10	1180	12977	19214	1041	11355	16511	994	10820	15647	948	10288	14801	902	9759	13974
0	-5	1189	13375	20020	1050	11714	17206	1004	11167	16308	957	10622	15427	911	10081	14567
0	0	1188	14262	21641	1049	12483	18570	1002	11897	17589	956	11315	16631	909	10735	15692
0	5	1183	15405	23714	1044	13469	20306	998	12833	19221	951	12199	18158	905	11570	17120
0	10	1170	16843	26388	1031	14691	22520	985	13985	21290	938	13282	20086	892	12585	18912
1	-30	1151	11527	16538	1011	10055	14206	965	9570	13461	919	9087	12730	872	8606	12015
1	-25	1160	11552	16663	1021	10090	14327	975	9608	13580	928	9127	12847	882	8649	12129
5	-20	1171	11605	16840	1031	10148	14491	985	9668	13739	939	9190	13003	892	8714	12282
0	-15	1181	11666	17034	1042	10215	14670	995	9736	13913	949	9259	13172	903	8785	12447
0	-10	1191	11999	17699	1051	10517	15246	1005	10028	14461	959	9542	13693	912	9057	12940
0	-5	1200	12354	18420	1061	10839	15869	1014	10338	15052	968	9841	14254	922	9346	13472
0	0	1198	13131	19859	1059	11514	17081	1013	10981	16194	966	10450	15325	920	9923	14476
0	5	1194	14126	21691	1055	12374	18618	1008	11797	17638	962	11223	16679	915	10652	15741
0	10	1180	15349	24024	1041	13415	20552	995	12779	19446	948	12146	18364	902	11518	17308
1	-30	1161	10691	15277	1022	9342	13157	976	8897	12479	929	8453	11813	883	8011	11160
1	-25	1171	10714	15389	1032	9373	13264	985	8930	12584	939	8489	11917	892	8049	11262
5	-20	1181	10760	15546	1042	9426	13411	996	8985	12727	949	8546	12057	903	8109	11400
0	-15	1192	10816	15720	1053	9486	13571	1006	9046	12882	960	8609	12208	913	8173	11547
0	-10	1202	11115	16317	1062	9758	14089	1016	9310	13376	970	8864	12677	923	8419	11992
0	-5	1211	11432	16961	1072	10047	14648	1026	9590	13908	979	9134	13182	933	8681	12472
0	0	1209	12119	18247	1070	10645	15732	1024	10159	14929	977	9674	14141	931	9193	13371
0	5	1204	12990	19873	1065	11399	17098	1019	10875	16213	972	10353	15346	926	9834	14498
0	10	1190	14040	21924	1051	12295	18800	1005	11720	17804	958	11148	16830	912	10580	15879



Figure 4-24 (Sheet 10 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7°
5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-35	1212	23332	31944	1073	20377	27430	1026	19410	25988	980	18453	24579	934	17505	23200
	-30	1223	23428	32284	1084	20487	27747	1038	19526	26300	991	18572	24882	945	17628	23497
	-25	1234	23719	32903	1095	20765	28301	1049	19799	26832	1002	18841	25394	956	17893	23989
	-20	1245	24129	33702	1106	21145	29006	1060	20170	27508	1013	19202	26041	967	18245	24608
	-15	1256	25065	35244	1117	21981	30341	1070	20972	28777	1024	19974	27248	978	18986	25754
	-10	1267	26867	38020	1128	23565	32721	1081	22487	31033	1035	21420	29383	988	20364	27771
	-5	1277	29108	41439	1138	25528	35646	1092	24361	33802	1045	23207	32001	999	22066	30243
	0	1288	32484	46409	1149	28468	39881	1102	27161	37807	1056	25871	35783	1009	24596	33808
	5	1298	36751	52662	1159	32166	45191	1112	30679	42822	1066	29213	40513	1020	27767	38263
	10	1308	42473	60993	1169	37098	52231	1123	35362	49462	1076	33653	46765	1030	31971	44141
1 5 0 0	-35	1204	22298	30709	1065	19468	26357	1018	18541	24967	972	17623	23607	926	16714	22278
	-30	1215	22390	31041	1076	19573	26666	1029	18650	25268	983	17736	23901	937	16830	22564
	-25	1226	22665	31637	1087	19834	27196	1040	18907	25778	994	17990	24392	947	17079	23035
	-20	1237	23050	32401	1097	20191	27869	1051	19256	26424	1004	18329	25009	958	17411	23627
	-15	1247	23934	33883	1107	20979	29150	1061	20013	27641	1014	19055	26164	968	18107	24721
	-10	1257	25610	36496	1118	22454	31391	1071	21422	29763	1025	20402	28174	978	19390	26619
	-5	1267	27679	39690	1128	24268	34123	1082	23156	32352	1035	22054	30620	989	20965	28930
	0	1278	30769	44293	1139	26961	38047	1092	25721	36062	1046	24496	34124	999	23284	32232
	5	1288	34638	50036	1149	30319	42927	1102	28916	40671	1056	27533	38473	1009	26166	36328
	10	1298	39778	57617	1159	34757	49340	1112	33132	46720	1066	31532	44170	1020	29956	41687
1 5 0 0	-35	1192	20675	28736	1053	18041	24646	1006	17178	23339	960	16322	22061	914	15474	20811
	-30	1203	20755	29042	1064	18134	24930	1017	17275	23617	971	16423	22332	924	15578	21075
	-25	1214	20998	29586	1074	18367	25416	1028	17505	24085	982	16651	22783	935	15802	21508
	-20	1224	21340	30283	1085	18686	26032	1038	17815	24673	992	16953	23345	946	16099	22048
	-15	1234	22122	31622	1095	19384	27188	1048	18487	25773	1002	17598	24390	956	16718	23038
	-10	1243	23621	34016	1104	20701	29236	1057	19746	27713	1011	18799	26223	965	17862	24768
	-5	1252	25468	36942	1112	22318	31733	1066	21289	30074	1020	20270	28454	973	19261	26871
	0	1261	28164	41055	1122	24668	35236	1075	23528	33386	1029	22401	31579	982	21285	29815
	5	1271	31469	46066	1132	27542	39497	1085	26264	37411	1039	25003	35377	992	23755	33392
	10	1281	35799	52591	1141	31290	45023	1095	29828	42626	1049	28386	40291	1002	26962	38014
1 5 0 0	-35	1180	19187	26912	1041	16732	23063	994	15927	21834	948	15128	20631	901	14335	19453
	-30	1191	19257	27195	1051	16814	23326	1005	16013	22091	959	15219	20883	912	14430	19700
	-25	1201	19473	27694	1062	17023	23772	1016	16220	22521	969	15422	21295	923	14631	20096
	-20	1212	19778	28331	1072	17307	24334	1026	16497	23059	980	15694	21811	933	14896	20590
	-15	1221	20472	29544	1082	17929	25384	1036	17096	24057	989	16268	22757	943	15448	21488
	-10	1230	21797	31698	1091	19095	27227	1045	18210	25802	998	17332	24407	952	16462	23045
	-5	1239	23417	34312	1099	20514	29457	1053	19565	27911	1007	18624	26400	960	17692	24924
	0	1246	25783	38016	1107	22576	32607	1060	21528	30885	1014	20491	29204	967	19464	27563
	5	1253	28672	42526	1114	25086	36433	1068	23917	34497	1021	22760	32607	975	21617	30765
	10	1263	32351	48188	1124	28276	41232	1077	26951	39026	1031	25643	36876	985	24351	34780
1 4 0 0	-35	1168	17818	25219	1028	15526	21593	982	14774	20436	936	14028	19303	889	13287	18195
	-30	1178	17879	25481	1039	15600	21838	993	14852	20675	946	14109	19536	900	13372	18422
	-25	1189	18073	25941	1049	15787	22248	1003	15037	21069	957	14292	19915	910	13553	18787
	-20	1199	18344	26524	1060	16042	22764	1013	15286	21563	967	14536	20388	920	13791	19239
	-15	1208	18963	27627	1069	16596	23717	1023	15820	22470	976	15049	21249	930	14284	20055
	-10	1217	20138	29571	1078	17631	25381	1032	16810	24045	985	15994	22738	939	15185	21460
	-5	1226	21564	31915	1086	18882	27381	1040	18004	25936	993	17133	24524	947	16270	23145
	0	1233	23620	35196	1093	20676	30172	1047	19713	28572	1001	18760	27011	954	17814	25484
	5	1240	26108	39165	1100	22839	33538	1054	21773	31751	1007	20716	30004	961	19671	28301
	10	1245	29333	44291	1106	25630	37869	1059	24423	35830	1013	23232	33844	967	22053	31906
1 4 0 0	-35	1155	16554	23641	1016	14413	20225	970	13710	19134	923	13011	18066	877	12317	17020
	-30	1166	16608	23885	1026	14478	20451	980	13779	19355	934	13084	18282	887	12394	17232
	-25	1176	16781	24308	1037	14647	20830	990	13945	19718	944	13249	18632	897	12557	17568
	-20	1186	17024	24844	1047	14876	21303	1000	14169	20172	954	13468	19065	908	12773	17985
	-15	1195	17576	25848	1056	15371	22171	1010	14647	20998	963	13927	19849	917	13214	18727
	-10	1204	18622	27609	1065	16293	23678	1018	15528	22423	972	14769	21197	926	14017	19999
	-5	1212	19881	29717	1073	17399	25477	1027	16585	24125	980	15777	22804	934	14976	21513
	0	1219	21675	32637	1080	18965	27959	1033	18077	26469	987	17198	25015	941	16326	23594
	5	1226	23824	36135	1087	20836	30928	1040	19859	29271	994	18892	27655	947	17932	26076
	10	1230	26595	40645	1091	23235	34735	1045	22139	32859	998	21054	31028	952	19981	29243



Figure 4-24 (Sheet 11 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1143	15384	22167	1003	13380	18944	957	12722	17915	911	12068	16908	864	11417	15922
	-30	1153	15431	22393	1014	13440	19156	967	12784	18120	921	12134	17109	874	11487	16119
	-25	1163	15585	22782	1024	13591	19504	977	12934	18456	931	12282	17431	884	11634	16429
	-20	1173	15804	23276	1034	13797	19939	987	13136	18873	941	12481	17832	894	11828	16811
	-15	1182	16298	24192	1043	14241	20732	997	13565	19628	950	12892	18546	904	12225	17490
	-10	1191	17231	25791	1051	15063	22098	1005	14351	20921	959	13644	19769	912	12941	18642
	-5	1199	18346	27693	1059	16043	23720	1013	15288	22455	967	14538	21218	920	13793	20009
	0	1205	19917	30300	1066	17416	25937	1020	16597	24549	973	15783	23191	927	14976	21865
	5	1212	21781	33397	1073	19041	28565	1026	18143	27028	980	17254	25527	933	16372	24061
	10	1216	24163	37355	1077	21105	31907	1031	20106	30177	984	19116	28488	938	18136	26841
1 3 5 0 0	-35	1139	14247	20629	1000	12394	17637	953	11783	16680	907	11177	15744	860	10574	14828
	-30	1148	14293	20850	1009	12449	17840	963	11842	16878	916	11238	15936	870	10638	15015
	-25	1157	14435	21221	1018	12586	18168	972	11978	17194	925	11372	16238	879	10771	15305
	-20	1166	14635	21688	1027	12774	18578	981	12162	17586	934	11552	16613	888	10947	15663
	-15	1172	15097	22586	1033	13183	19344	986	12553	18309	940	11927	17297	894	11306	16308
	-10	1177	15949	24099	1038	13930	20629	992	13266	19522	945	12606	18440	899	11951	17382
	-5	1185	16940	25820	1046	14801	22096	999	14098	20909	953	13401	19750	906	12707	18615
	0	1192	18320	28154	1052	16007	24080	1006	15249	22783	959	14495	21515	913	13747	20276
	5	1198	19943	30907	1059	17424	26416	1012	16597	24986	966	15778	23591	919	14964	22227
	10	1202	22000	34398	1063	19208	29363	1016	18293	27762	970	17388	26201	924	16490	24677
1 2 5 0 0	-35	1148	13158	19024	1009	11467	16302	962	10908	15430	916	10354	14578	869	9802	13744
	-30	1157	13197	19221	1018	11514	16483	972	10960	15608	925	10407	14749	879	9859	13911
	-25	1166	13321	19551	1027	11635	16776	981	11080	15890	934	10526	15020	888	9977	14171
	-20	1175	13496	19966	1036	11800	17141	990	11241	16238	943	10685	15354	897	10132	14489
	-15	1181	13898	20760	1042	12157	17820	996	11584	16881	949	11013	15961	903	10447	15063
	-10	1183	14659	22162	1044	12820	19003	997	12214	17994	951	11613	17008	904	11015	16044
	-5	1183	15572	23842	1043	13612	20417	997	12967	19324	951	12327	18257	904	11690	17212
	0	1178	16862	26175	1038	14720	22366	992	14017	21154	945	13317	19967	899	12624	18810
	5	1184	18280	28630	1044	15957	24447	998	15196	23117	952	14440	21818	905	13688	20548
	10	1188	20065	31722	1048	17507	27058	1002	16668	25574	956	15837	24127	909	15012	22715
1 2 5 0 0	-35	1157	12180	17564	1018	10632	15086	972	10121	14293	925	9612	13515	879	9107	12755
	-30	1167	12214	17740	1028	10674	15248	981	10166	14450	935	9660	13669	888	9157	12904
	-25	1176	12323	18034	1037	10781	15510	991	10273	14703	944	9766	13911	898	9263	13138
	-20	1185	12477	18404	1046	10927	15836	1000	10416	15015	953	9907	14210	907	9401	13423
	-15	1191	12829	19110	1052	11242	16441	1006	10718	15587	959	10197	14752	913	9679	13934
	-10	1193	13493	20351	1053	11820	17489	1007	11270	16576	961	10722	15681	914	10177	14806
	-5	1192	14283	21831	1053	12509	18738	1007	11925	17751	960	11343	16784	914	10766	15841
	0	1186	15397	23895	1047	13466	20462	1000	12830	19367	954	12199	18298	908	11572	17253
	5	1179	16700	26315	1040	14584	22482	994	13889	21262	947	13197	20068	901	12512	18905
	10	1173	18322	29284	1034	15973	24956	987	15202	23580	941	14437	22237	894	13678	20926
1 1 5 0 0	-35	1168	11296	16228	1029	9877	13973	982	9407	13249	936	8941	12542	889	8476	11848
	-30	1177	11325	16384	1038	9913	14116	992	9448	13391	945	8983	12679	899	8522	11983
	-25	1187	11423	16649	1048	10010	14353	1001	9542	13616	955	9079	12897	908	8616	12191
	-20	1196	11559	16979	1057	10139	14643	1010	9670	13895	964	9204	13164	917	8739	12446
	-15	1202	11869	17608	1063	10418	15184	1016	9938	14408	970	9461	13648	923	8986	12904
	-10	1203	12451	18711	1064	10927	16118	1018	10425	15289	971	9924	14477	925	9427	13684
	-5	1203	13141	20023	1064	11529	17226	1017	10997	16332	971	10469	15458	924	9942	14602
	0	1196	14105	21842	1057	12359	18748	1011	11785	17762	964	11212	16795	918	10644	15852
	5	1189	15221	23960	1050	13319	20518	1004	12693	19421	957	12071	18349	911	11453	17302
	10	1171	16661	26775	1032	14535	22836	985	13836	21583	939	13142	20360	892	12453	19165
1 1 0 0 0	-35	1179	10491	15002	1039	9187	12948	993	8756	12290	946	8327	11645	900	7900	11013
	-30	1188	10516	15140	1049	9220	13077	1003	8792	12416	956	8365	11767	910	7941	11133
	-25	1198	10603	15376	1058	9305	13286	1012	8877	12618	966	8451	11963	919	8025	11319
	-20	1207	10724	15671	1068	9422	13548	1021	8991	12867	975	8564	12202	928	8136	11548
	-15	1213	10999	16234	1074	9670	14033	1027	9230	13327	981	8793	12637	934	8357	11960
	-10	1214	11513	17219	1075	10121	14868	1029	9661	14116	982	9203	13379	936	8748	12658
	-5	1214	12120	18387	1074	10650	15854	1028	10166	15046	982	9684	14254	935	9204	13479
	0	1207	12961	20001	1068	11377	17208	1021	10854	16316	975	10335	15444	928	9818	14590
	5	1200	13926	21867	1060	12208	18769	1014	11643	17782	968	11080	16815	921	10520	15871
	10	1181	15138	24312	1041	13233	20785	995	12606	19662	949	11984	18566	902	11364	17493



Figure 4-24 (Sheet 12 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1233	23349	32340	1093	20441	27821	1047	19490	26378	1001	18548	24967	954	17613	23585
6	-30	1244	23773	33203	1105	20834	28578	1058	19872	27102	1012	18920	25658	965	17976	24246
3	-25	1255	24522	34514	1116	21508	29717	1069	20522	28186	1023	19547	26691	976	18579	25226
0	-20	1266	25320	35918	1127	22226	30936	1080	21214	29347	1034	20213	27794	988	19221	26276
0	-15	1277	27118	38652	1138	23809	33287	1091	22727	31576	1045	21659	29906	999	20601	28274
0	-10	1288	29442	42126	1149	25845	36263	1102	24673	34398	1056	23514	32577	1009	22367	30797
	-5	1299	32510	46678	1159	28522	40151	1113	27226	38078	1067	25945	36055	1020	24678	34078
	0	1309	36554	52637	1170	32035	45222	1124	30570	42871	1077	29124	40579	1031	27697	38343
	5	1320	41823	60364	1180	36587	51768	1134	34896	49050	1088	33230	46402	1041	31589	43825
	10	1330	49031	70878	1191	42773	60623	1144	40761	57392	1098	38784	54250	1051	36841	51196
1	-35	1225	22299	31061	1086	19518	26711	1040	18608	25322	993	17704	23961	947	16810	22632
6	-30	1237	22693	31876	1097	19883	27426	1051	18964	26006	1005	18052	24616	958	17148	23257
0	-25	1247	23392	33119	1108	20513	28505	1062	19571	27033	1015	18637	25593	969	17712	24185
0	-20	1258	24141	34459	1119	21186	29667	1072	20219	28138	1026	19261	26643	979	18312	25182
0	-15	1267	25839	37092	1128	22678	31924	1081	21644	30277	1035	20622	28668	989	19609	27095
0	-10	1278	27988	40339	1139	24562	34707	1092	23444	32914	1046	22339	31164	999	21244	29452
	-5	1288	30799	44559	1149	27018	38313	1103	25787	36328	1056	24569	34389	1010	23367	32498
	0	1299	34469	50036	1160	30210	42977	1113	28827	40737	1067	27461	38552	1020	26113	36422
	5	1309	39203	57073	1170	34307	48943	1124	32723	46371	1077	31160	43863	1031	29621	41421
	10	1320	45596	66533	1180	39806	56922	1134	37941	53890	1087	36105	50940	1041	34300	48071
1	-35	1213	20672	29065	1074	18084	24975	1028	17237	23671	981	16395	22392	935	15561	21142
5	-30	1224	21019	29806	1085	18408	25627	1039	17553	24294	992	16704	22988	946	15863	21712
5	-25	1235	21640	30933	1096	18968	26606	1049	18093	25226	1003	17225	23875	956	16364	22554
0	-20	1245	22301	32144	1106	19564	27657	1060	18668	26226	1013	17779	24826	967	16898	23457
0	-15	1254	23810	34535	1114	20888	29702	1068	19933	28163	1022	18987	26658	975	18048	25186
0	-10	1261	25750	37557	1122	22586	32285	1076	21553	30606	1029	20529	28965	983	19516	27363
	-5	1271	28201	41316	1132	24729	35496	1086	23597	33645	1039	22476	31836	993	21368	30072
	0	1282	31339	46101	1142	27463	39572	1096	26202	37499	1050	24956	35477	1003	23724	33503
	5	1292	35326	52163	1153	30923	44719	1106	29494	42359	1060	28084	40060	1013	26692	37818
	10	1302	40612	60170	1163	35485	51485	1116	33827	48740	1070	32194	46067	1023	30585	43466
1	-35	1201	19180	27218	1062	16770	23372	1015	15978	22143	969	15193	20940	922	14414	19763
5	-30	1212	19489	27897	1073	17058	23968	1026	16260	22713	980	15470	21486	933	14684	20285
0	-25	1222	20040	28921	1083	17557	24858	1037	16743	23561	990	15934	22292	944	15133	21052
0	-20	1233	20628	30020	1093	18087	25811	1047	17254	24468	1000	16427	23154	954	15608	21871
0	-15	1241	21960	32168	1101	19258	27650	1055	18373	26210	1009	17497	24803	962	16626	23426
0	-10	1248	23663	34869	1109	20750	29957	1063	19797	28393	1016	18852	26863	970	17917	25370
	-5	1255	25841	38308	1116	22650	32886	1070	21608	31161	1023	20576	29476	977	19554	27830
	0	1264	28573	42588	1125	25030	36527	1078	23875	34601	1032	22733	32722	985	21602	30887
	5	1274	31958	47850	1135	27973	40998	1088	26677	38824	1042	25397	36705	996	24132	34638
	10	1284	36375	54697	1145	31795	46792	1098	30310	44290	1052	28846	41853	1005	27401	39479
1	-35	1188	17808	25505	1049	15559	21883	1003	14820	20725	956	14086	19592	910	13358	18484
4	-30	1199	18083	26126	1060	15817	22429	1014	15073	21248	967	14333	20091	921	13600	18962
5	-25	1209	18575	27060	1070	16262	23239	1024	15503	22020	977	14749	20827	931	14002	19661
0	-20	1220	19098	28060	1080	16735	24107	1034	15960	22847	988	15191	21613	941	14426	20406
0	-15	1228	20279	29999	1088	17774	25766	1042	16953	24417	996	16139	23099	949	15330	21808
0	-10	1235	21780	32420	1096	19090	27835	1049	18209	26374	1003	17336	24947	956	16469	23550
	-5	1242	23676	35473	1103	20747	30435	1056	19788	28831	1010	18839	27265	963	17898	25735
	0	1249	26055	39299	1110	22819	33686	1063	21761	31900	1017	20715	30158	970	19679	28457
	5	1256	29005	44027	1117	25380	37693	1070	24198	35681	1024	23030	33720	977	21874	31806
	10	1266	32729	49933	1126	28608	42694	1080	27269	40400	1034	25948	38167	987	24641	35988
1	-35	1176	16543	23911	1037	14441	20495	990	13749	19403	944	13064	18337	897	12381	17291
4	-30	1186	16787	24479	1047	14671	20996	1001	13976	19884	954	13285	18795	908	12599	17730
0	-25	1197	17228	25334	1057	15070	21737	1011	14362	20589	964	13658	19466	918	12960	18369
0	-20	1207	17695	26246	1067	15493	22528	1021	14771	21343	974	14052	20182	928	13340	19049
0	-15	1214	18744	27998	1075	16418	24029	1029	15655	22764	982	14897	21526	936	14145	20316
0	-10	1221	20071	30177	1082	17582	25889	1036	16766	24523	989	15956	23187	943	15153	21883
	-5	1228	21729	32898	1089	19032	28207	1043	18149	26714	996	17272	25253	950	16405	23829
	0	1235	23784	36273	1096	20824	31075	1049	19855	29421	1003	18896	27806	956	17946	26230
	5	1241	26323	40445	1102	23029	34608	1055	21953	32753	1009	20889	30944	962	19835	29179
	10	1247	29556	45738	1108	25828	39079	1061	24613	36966	1015	23413	34908	968	22226	32901



Figure 4-24 (Sheet 13 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1163	15370	22418	1024	13405	19198	977	12757	18168	931	12115	17161	884	11476	16176
	-30	1173	15588	22941	1034	13611	19658	988	12961	18609	941	12314	17583	895	11672	16580
	-25	1183	15983	23722	1044	13970	20337	998	13308	19256	951	12650	18198	905	11996	17164
	-20	1193	16401	24556	1054	14349	21060	1008	13674	19944	961	13004	18853	915	12338	17786
	-15	1201	17337	26147	1062	15174	22421	1015	14463	21232	969	13757	20070	922	13056	18934
	-10	1208	18514	28112	1069	16207	24099	1022	15449	22819	976	14698	21569	929	13951	20346
	-5	1215	19969	30546	1075	17479	26170	1029	16663	24777	982	15853	23415	936	15050	22085
	0	1221	21752	33537	1082	19036	28712	1035	18146	27176	989	17264	25676	942	16390	24213
	5	1227	23933	37200	1087	20932	31814	1041	19951	30102	995	18980	28433	948	18016	26801
	10	1231	26702	41853	1092	23330	35740	1046	22230	33801	999	21141	31910	953	20064	30066
1 3 5 0 0	-35	1165	14207	20762	1026	12401	17801	979	11806	16854	933	11215	15928	887	10627	15022
	-30	1175	14405	21249	1035	12587	18227	989	11988	17261	943	11394	16317	896	10802	15392
	-25	1182	14764	21989	1043	12911	18865	997	12302	17868	950	11695	16891	904	11092	15936
	-20	1190	15146	22782	1051	13255	19547	1004	12632	18514	958	12014	17504	912	11399	16516
	-15	1187	16041	24424	1048	14027	20924	1002	13365	19808	955	12706	18716	909	12053	17650
	-10	1194	17089	26203	1055	14946	22441	1008	14242	21242	962	13543	20070	916	12849	18925
	-5	1201	18369	28387	1061	16067	24300	1015	15312	22999	968	14561	21726	922	13817	20484
	0	1207	19922	31047	1067	17423	26559	1021	16604	25131	975	15792	23737	928	14985	22374
	5	1212	21804	34278	1073	19062	29296	1027	18164	27712	980	17274	26166	934	16392	24658
	10	1217	24171	38345	1077	21113	32727	1031	20114	30944	985	19124	29205	938	18143	27508
1 2 5 0 0	-35	1174	13132	19150	1035	11481	16455	989	10938	15594	942	10396	14749	896	9858	13923
	-30	1184	13306	19583	1045	11646	16835	998	11099	15957	952	10555	15097	905	10014	14255
	-25	1192	13621	20242	1053	11932	17404	1006	11374	16496	960	10821	15609	913	10270	14740
	-20	1199	13954	20943	1060	12232	18009	1014	11665	17072	967	11101	16154	921	10540	15257
	-15	1196	14728	22404	1056	12899	19232	1010	12298	18221	964	11700	17231	917	11105	16262
	-10	1189	15718	24240	1050	13750	20766	1003	13102	19658	957	12459	18575	910	11819	17516
	-5	1186	16908	26394	1047	14776	22572	1001	14076	21356	954	13380	20166	908	12689	19004
	0	1192	18265	28767	1053	15962	24588	1007	15206	23258	960	14455	21958	914	13711	20690
	5	1198	19898	31631	1058	17383	27011	1012	16559	25543	966	15742	24110	919	14931	22710
	10	1202	21930	35202	1063	19147	30026	1016	18235	28381	970	17333	26778	923	16437	25212
1 2 5 0 0	-35	1184	12165	17681	1045	10654	15228	999	10155	14443	952	9658	13673	906	9165	12921
	-30	1194	12319	18068	1055	10801	15569	1008	10299	14769	962	9801	13986	916	9305	13219
	-25	1202	12597	18655	1063	11053	16076	1016	10543	15251	970	10037	14444	923	9532	13653
	-20	1210	12890	19280	1070	11318	16615	1024	10800	15764	978	10285	14931	931	9771	14114
	-15	1206	13559	20571	1066	11896	17698	1020	11349	16781	974	10804	15884	927	10262	15005
	-10	1199	14407	22182	1060	12626	19046	1013	12039	18045	967	11456	17066	920	10876	16108
	-5	1191	15454	24163	1052	13524	20698	1005	12888	19593	959	12258	18515	912	11630	17459
	0	1182	16725	26568	1043	14611	22701	997	13917	21470	950	13226	20266	904	12541	19092
	5	1183	18178	29215	1044	15869	24928	997	15110	23564	951	14358	22233	904	13611	20933
	10	1187	19932	32366	1048	17391	27585	1001	16558	26067	955	15732	24585	908	14912	23139
1 1 5 0 0	-35	1195	11290	16336	1056	9903	14103	1009	9445	13388	963	8989	12687	916	8535	12000
	-30	1205	11427	16682	1066	10035	14409	1019	9575	13681	973	9117	12967	926	8661	12268
	-25	1213	11673	17206	1074	10259	14862	1027	9792	14112	981	9328	13378	934	8865	12658
	-20	1221	11932	17763	1081	10494	15344	1035	10020	14571	988	9547	13812	942	9078	13071
	-15	1216	12513	18908	1077	10998	16306	1031	10499	15476	984	10001	14661	938	9506	13864
	-10	1209	13246	20333	1070	11629	17498	1024	11096	16593	977	10565	15706	931	10038	14840
	-5	1201	14146	22074	1062	12402	18952	1015	11827	17956	969	11256	16982	923	10689	16031
	0	1192	15229	24173	1053	13330	20702	1007	12706	19597	960	12084	18515	914	11468	17460
	5	1180	16541	26739	1041	14448	22830	994	13759	21586	948	13076	20371	901	12396	19185
	10	1171	18140	29794	1032	15813	25369	986	15050	23964	939	14292	22592	893	13540	21254
1 1 5 0 0	-35	1206	10492	15099	1067	9218	13067	1020	8796	12415	974	8377	11777	928	7960	11152
	-30	1216	10615	15409	1077	9336	13341	1030	8913	12678	984	8493	12029	938	8074	11393
	-25	1224	10834	15878	1085	9537	13749	1038	9108	13066	992	8681	12397	946	8257	11743
	-20	1232	11064	16376	1093	9747	14180	1046	9311	13476	1000	8878	12788	953	8447	12113
	-15	1228	11574	17399	1088	10188	15039	1042	9731	14284	995	9276	13545	949	8823	12822
	-10	1220	12209	18661	1081	10737	16097	1034	10251	15277	988	9767	14474	942	9287	13690
	-5	1212	12989	20202	1072	11407	17384	1026	10886	16485	980	10368	15606	933	9851	14744
	0	1203	13920	22047	1063	12207	18925	1017	11643	17929	970	11081	16955	924	10524	16005
	5	1190	15031	24281	1051	13155	20779	1004	12537	19664	958	11924	18575	911	11313	17510
	10	1172	16424	27104	1032	14331	23105	986	13644	21834	940	12961	20594	893	12282	19382



Figure 4-24 (Sheet 14 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-35	1253	24105	33926	1114	21142	29210	1067	20173	27706	1021	19213	26235	974	18262	24796
	-30	1264	25080	35519	1125	22014	30594	1079	21012	29023	1032	20019	27487	986	19036	25986
	-25	1276	26291	37450	1137	23090	32264	1090	22044	30611	1044	21009	28996	997	19984	27417
	-20	1287	27782	39789	1148	24409	34282	1102	23308	32528	1055	22218	30814	1009	21141	29141
	-15	1298	30089	43261	1159	26434	37262	1113	25243	35354	1066	24064	33489	1020	22900	31670
	-10	1309	32820	47354	1170	28822	40766	1124	27523	38674	1077	26238	36631	1031	24969	34637
	-5	1320	36674	53081	1181	32176	45648	1135	30717	43291	1088	29277	40992	1042	27857	38751
	0	1331	41564	60302	1192	36411	51779	1145	34744	49082	1099	33103	46455	1053	31487	43898
	5	1342	48245	70123	1202	42158	60070	1156	40199	56899	1110	38274	53817	1063	36381	50819
	10	1352	57616	83773	1213	50152	71511	1167	47765	67662	1120	45425	63927	1074	43133	60304
1 6 0 0	-35	1245	23013	32582	1106	20180	28043	1059	19252	26594	1013	18333	25177	967	17422	23791
	-30	1255	23943	34136	1116	21007	29385	1069	20046	27869	1023	19095	26387	977	18153	24940
	-25	1266	25074	35969	1127	22012	30969	1080	21011	29375	1034	20020	27817	987	19038	26294
	-20	1277	26453	38161	1138	23234	32861	1091	22181	31171	1045	21141	29522	999	20111	27911
	-15	1288	28580	41398	1149	25102	35640	1103	23968	33808	1056	22845	32017	1010	21735	30270
	-10	1299	31083	45195	1160	27294	38892	1113	26060	36889	1067	24841	34933	1021	23636	33025
	-5	1310	34585	50465	1171	30345	43387	1124	28967	41140	1078	27608	38950	1031	26265	36812
	0	1321	38984	57049	1181	34160	48981	1135	32599	46428	1089	31060	43939	1042	29541	41514
	5	1331	44917	65897	1192	39277	56463	1146	37459	53485	1099	35669	50587	1053	33908	47767
	10	1342	53094	77999	1202	46274	66628	1156	44087	63053	1110	41941	59581	1063	39835	56210
1 5 0 0	-35	1233	21307	30454	1093	18674	26192	1047	17812	24833	1000	16956	23502	954	16109	22202
	-30	1243	22127	31855	1103	19406	27403	1057	18515	25984	1010	17631	24594	964	16756	23237
	-25	1252	23139	33541	1113	20305	28858	1066	19377	27365	1020	18458	25905	974	17547	24479
	-20	1261	24383	35580	1122	21403	30611	1076	20429	29028	1029	19463	27479	983	18507	25967
	-15	1271	26271	38526	1132	23061	33136	1085	22012	31419	1039	20974	29742	993	19947	28106
	-10	1282	28451	41896	1143	24973	36024	1096	23839	34157	1050	22717	32333	1003	21606	30552
	-5	1292	31448	46505	1153	27589	39957	1107	26334	37879	1060	25092	35849	1014	23866	33870
	0	1303	35158	52186	1164	30816	44791	1117	29406	42447	1071	28015	40162	1024	26641	37933
	5	1313	40072	59691	1174	35067	51149	1128	33448	48447	1081	31852	45816	1035	30280	43256
	10	1324	46675	69720	1184	40742	59596	1138	38832	56406	1092	36954	53304	1045	35106	50288
1 5 0 0	-35	1220	19741	28486	1081	17293	24482	1034	16489	23203	988	15693	21954	941	14902	20731
	-30	1230	20468	29753	1091	17943	25579	1044	17114	24246	998	16293	22943	951	15478	21669
	-25	1239	21362	31274	1100	18738	26890	1054	17878	25492	1007	17024	24124	961	16179	22788
	-20	1248	22457	33104	1109	19706	28464	1063	18805	26984	1016	17912	25538	970	17027	24126
	-15	1256	24140	35797	1117	21181	30765	1071	20214	29164	1024	19254	27597	978	18305	26068
	-10	1264	26098	38917	1125	22894	33429	1078	21847	31683	1032	20811	29978	986	19786	28314
	-5	1275	28678	42971	1135	25149	36890	1089	23999	34958	1043	22862	33073	996	21736	31233
	0	1285	31828	47906	1146	27895	41094	1099	26614	38931	1053	25351	36824	1006	24101	34768
	5	1295	35939	54336	1156	31460	46546	1110	30008	44081	1063	28574	41677	1017	27160	39337
	10	1305	41345	62758	1166	36125	53558	1120	34438	50784	1073	32776	47987	1027	31140	45267
1 4 0 0	-35	1207	18304	26663	1068	16023	22897	1022	15275	21695	975	14531	20518	929	13793	19368
	-30	1217	18950	27813	1078	16602	23892	1031	15830	22640	985	15066	21417	938	14306	20219
	-25	1226	19744	29190	1087	17308	25079	1041	16510	23768	994	15716	22485	948	14930	21232
	-20	1235	20712	30840	1096	18166	26498	1049	17330	25113	1003	16502	23759	957	15681	22437
	-15	1243	22192	33250	1104	19464	28559	1057	18570	27063	1011	17685	25603	964	16807	24176
	-10	1250	23904	36031	1111	20964	30934	1065	20002	29311	1018	19049	27726	972	18105	26178
	-5	1258	26187	39735	1118	22954	34084	1072	21899	32288	1026	20854	30534	979	19819	28822
	0	1267	28903	44106	1127	25322	37803	1081	24155	35802	1035	23001	33850	988	21859	31945
	5	1277	32373	49661	1138	28338	42519	1091	27026	40255	1045	25731	38049	998	24450	35898
	10	1287	36853	56816	1147	32213	48567	1101	30711	45960	1055	29228	43421	1008	27765	40948
1 4 0 0	-35	1194	16981	24968	1055	14854	21424	1009	14155	20292	962	13460	19184	916	12770	18101
	-30	1204	17558	26016	1065	15370	22329	1018	14651	21152	972	13938	20001	925	13229	18875
	-25	1213	18264	27265	1074	16000	23406	1027	15256	22175	981	14518	20971	934	13784	19793
	-20	1222	19123	28757	1082	16760	24688	1036	15985	23391	990	15216	22123	943	14452	20882
	-15	1229	20428	30922	1090	17907	26539	1044	17081	25143	997	16261	23778	951	15448	22445
	-10	1237	21931	33408	1097	19224	28661	1051	18338	27151	1004	17459	25674	958	16588	24232
	-5	1244	23902	36675	1104	20946	31442	1058	19979	29778	1012	19022	28153	965	18073	26567
	0	1251	26264	40586	1111	23002	34762	1065	21938	32913	1018	20884	31108	972	19841	29347
	5	1258	29264	45537	1119	25608	38957	1072	24417	36870	1026	23240	34836	979	22075	32852
	10	1268	33012	51672	1128	28858	44149	1082	27509	41768	1036	26177	39449	989	24860	37189



Figure 4-24 (Sheet 15 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1181	15760	23389	1042	13773	20049	996	13119	18982	949	12469	17939	903	11825	16920
	-30	1191	16275	24344	1051	14234	20874	1005	13564	19767	958	12897	18683	912	12235	17624
	-25	1200	16905	25480	1060	14796	21853	1014	14104	20697	967	13415	19565	921	12732	18459
	-20	1208	17668	26832	1069	15474	23016	1022	14752	21798	976	14037	20609	930	13327	19446
	-15	1215	18824	28783	1076	16490	24684	1030	15724	23377	983	14963	22100	937	14209	20853
	-10	1223	20148	31013	1083	17650	26586	1037	16832	25177	991	16020	23800	944	15214	22454
	-5	1229	21857	33908	1090	19146	29051	1044	18258	27506	997	17377	25996	951	16505	24523
	0	1236	23886	37344	1097	20915	31969	1051	19944	30261	1004	18981	28593	958	18027	26965
	5	1242	26468	41723	1103	23156	35673	1056	22075	33753	1010	21006	31881	963	19946	30054
	10	1248	29691	47167	1109	25948	40271	1063	24730	38087	1016	23524	35957	970	22334	33883
1 3 5 0 0	-35	1179	14571	21708	1040	12739	18620	994	12136	17634	947	11535	16667	901	10939	15724
	-30	1182	15061	22689	1043	13168	19449	996	12544	18414	950	11926	17404	903	11310	16415
	-25	1186	15652	23818	1047	13687	20408	1000	13040	19320	954	12398	18256	907	11760	17217
	-20	1194	16332	25045	1055	14291	21463	1009	13620	20321	962	12953	19204	916	12291	18112
	-15	1201	17359	26809	1062	15194	22970	1016	14483	21747	969	13776	20550	923	13075	19382
	-10	1208	18527	28813	1069	16219	24680	1023	15462	23364	976	14710	22078	930	13964	20822
	-5	1215	20018	31391	1076	17524	26874	1029	16705	25435	983	15894	24031	937	15090	22661
	0	1222	21769	34423	1082	19051	29448	1036	18162	27867	990	17280	26323	943	16405	24815
	5	1227	23975	38253	1088	20970	32689	1041	19987	30922	995	19014	29199	948	18049	27516
	10	1232	26724	43026	1093	23351	36716	1046	22249	34714	1000	21161	32764	953	20082	30862
1 2 5 0 0	-35	1189	13451	19994	1049	11778	17186	1003	11227	16289	956	10679	15410	910	10134	14551
	-30	1191	13873	20860	1052	12150	17921	1006	11583	16982	959	11018	16063	913	10457	15164
	-25	1193	14393	21893	1054	12605	18794	1007	12016	17805	961	11430	16836	914	10848	15890
	-20	1193	15030	23137	1054	13158	19842	1007	12542	18791	961	11930	17763	914	11321	16758
	-15	1187	16014	24977	1048	14004	21381	1002	13343	20234	955	12685	19112	909	12033	18018
	-10	1194	17049	26785	1055	14913	22922	1008	14210	21691	962	13513	20489	916	12821	19315
	-5	1201	18353	29087	1061	16053	24879	1015	15298	23540	968	14548	22231	922	13805	20954
	0	1207	19870	31774	1068	17379	27161	1021	16562	25694	975	15752	24262	928	14947	22863
	5	1212	21765	35140	1073	19028	30009	1026	18131	28378	980	17243	26788	933	16361	25236
	10	1217	24100	39293	1077	21052	33512	1031	20056	31678	985	19070	29891	938	18092	28147
1 2 5 0 0	-35	1199	12446	18436	1059	10916	15882	1013	10412	15066	967	9910	14267	920	9410	13484
	-30	1201	12812	19204	1062	11240	16535	1016	10722	15683	969	10205	14846	923	9692	14029
	-25	1203	13263	20118	1064	11635	17309	1017	11098	16411	971	10565	15534	924	10033	14673
	-20	1203	13811	21215	1063	12112	18233	1017	11553	17282	971	10997	16352	924	10443	15441
	-15	1197	14652	22828	1058	12836	19584	1011	12238	18549	965	11644	17537	918	11052	16547
	-10	1190	15623	24677	1051	13670	21128	1005	13027	19997	958	12388	18891	912	11754	17812
	-5	1186	16837	26966	1046	14713	23043	1000	14016	21795	954	13324	20576	907	12635	19384
	0	1192	18157	29356	1053	15868	25072	1006	15116	23709	960	14370	22379	913	13629	21079
	5	1197	19794	32330	1057	17292	27586	1011	16472	26079	965	15659	24609	918	14851	23173
	10	1201	21787	35960	1062	19022	30649	1015	18117	28964	969	17220	27320	923	16331	25717
1 1 5 0 0	-35	1209	11538	17011	1070	10137	14690	1024	9675	13948	977	9213	13219	931	8756	12507
	-30	1212	11859	17696	1073	10421	15272	1026	9945	14496	980	9473	13737	933	9002	12993
	-25	1214	12252	18509	1074	10765	15960	1028	10275	15145	981	9787	14348	935	9302	13568
	-20	1213	12726	19479	1074	11180	16780	1028	10671	15919	981	10163	15074	935	9659	14249
	-15	1207	13449	20900	1068	11803	17970	1021	11260	17034	975	10721	16120	929	10185	15226
	-10	1201	14278	22519	1061	12515	19323	1015	11935	18304	968	11358	17308	922	10785	16335
	-5	1193	15328	24574	1053	13416	21038	1007	12788	19912	960	12162	18811	914	11542	17737
	0	1184	16552	26971	1045	14465	23036	998	13778	21783	952	13097	20560	906	12420	19366
	5	1181	18023	29775	1042	15732	25384	995	14979	23988	949	14232	22625	903	13491	21296
	10	1185	19734	32967	1046	17217	28074	1000	16393	26522	953	15573	25006	907	14762	23530
1 1 0 0 0	-35	1221	10714	15705	1081	9427	13594	1035	9002	12918	988	8578	12255	942	8157	11607
	-30	1223	10995	16317	1084	9677	14115	1037	9241	13410	991	8808	12720	945	8376	12043
	-25	1225	11339	17041	1085	9979	14728	1039	9531	13990	993	9085	13266	946	8639	12556
	-20	1224	11753	17905	1085	10342	15459	1039	9877	14678	992	9413	13912	946	8952	13163
	-15	1218	12378	19163	1079	10882	16514	1032	10388	15667	986	9897	14839	939	9408	14029
	-10	1211	13090	20587	1072	11495	17706	1025	10969	16786	979	10446	15887	932	9925	15007
	-5	1203	13990	22390	1063	12268	19212	1017	11702	18200	971	11138	17210	924	10577	16242
	0	1194	15028	24477	1055	13159	20953	1008	12543	19830	962	11932	18734	916	11325	17664
	5	1180	16332	27130	1040	14266	23149	994	13587	21883	948	12913	20648	901	12242	19441
	10	1169	17902	30266	1030	15604	25750	983	14848	24314	937	14100	22916	890	13356	21551



Figure 4-24 (Sheet 16 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7°
8000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1274	26051	37172	1135	22877	32017	1088	21840	30375	1042	20814	28770	996	19798	27202
6	-30	1286	27380	39240	1146	24056	33809	1100	22972	32080	1054	21899	30390	1007	20836	28738
3	-25	1297	28892	41577	1158	25396	35831	1112	24256	34002	1065	23127	32214	1019	22012	30470
0	-20	1309	30981	44758	1170	27234	38567	1123	26013	36598	1077	24806	34675	1030	23613	32798
0	-15	1320	33695	48852	1181	29610	42077	1134	28281	39924	1088	26970	37824	1042	25675	35776
0	-10	1331	37157	54042	1192	32628	46509	1146	31160	44121	1099	29710	41791	1053	28281	39521
	-5	1343	41854	61027	1203	36702	52450	1157	35037	49736	1110	33395	47091	1064	31779	44517
	0	1354	47995	70092	1214	41997	60121	1168	40066	56975	1121	38167	53915	1075	36300	50939
	5	1364	56776	82958	1225	49506	70932	1179	47180	67155	1132	44898	63487	1086	42661	59927
	10	1375	69514	101366	1236	60278	86257	1189	57346	81539	1143	54485	76974	1097	51690	72556
1	-35	1264	24852	35711	1125	21816	30740	1078	20822	29155	1032	19840	27608	986	18866	26094
6	-30	1276	26082	37650	1136	22908	32420	1090	21872	30754	1044	20846	29127	997	19829	27535
3	-25	1287	27479	39836	1148	24146	34311	1102	23059	32552	1055	21982	30833	1009	20917	29155
0	-20	1299	29400	42797	1159	25837	36858	1113	24677	34971	1066	23528	33125	1020	22392	31324
0	-15	1310	31881	46587	1171	28014	40111	1124	26755	38053	1078	25511	36044	1031	24281	34083
0	-10	1321	35025	51362	1182	30759	44192	1135	29373	41916	1089	28006	39698	1042	26655	37534
	-5	1332	39250	57732	1193	34430	49614	1146	32869	47044	1100	31330	44539	1053	29812	42097
	0	1343	44710	65909	1204	39148	56544	1157	37353	53586	1111	35588	50708	1064	33849	47906
	5	1354	52385	77337	1214	45732	66167	1168	43597	62653	1122	41501	59239	1075	39442	55921
	10	1364	63259	93339	1225	54971	79534	1179	52330	75214	1132	49746	71026	1086	47219	66970
1	-35	1251	22931	33275	1112	20123	28628	1066	19204	27146	1019	18293	25697	973	17390	24281
5	-30	1260	24055	35116	1121	21117	30213	1075	20156	28650	1028	19203	27122	982	18260	25630
5	-25	1270	25309	37140	1131	22226	31958	1084	21218	30307	1038	20220	28694	992	19232	27118
0	-20	1281	26985	39778	1142	23704	34229	1096	22634	32464	1049	21573	30738	1003	20524	29053
0	-15	1292	29134	43130	1153	25592	37106	1107	24437	35190	1060	23294	33319	1014	22165	31494
0	-10	1303	31827	47309	1164	27948	40680	1118	26686	38576	1071	25438	36521	1025	24206	34518
	-5	1314	35395	52811	1175	31056	45370	1128	29647	43011	1082	28257	40711	1036	26885	38469
	0	1325	39923	59758	1186	34982	51269	1139	33383	48584	1093	31807	45968	1046	30253	43420
	5	1336	46136	69255	1196	40334	59287	1150	38465	56144	1103	36626	53087	1057	34818	50115
	10	1346	54650	82154	1207	47614	70111	1160	45359	66327	1114	43148	62656	1067	40978	59092
1	-35	1239	21184	31042	1099	18581	26687	1053	17728	25299	1006	16882	23941	960	16043	22614
5	-30	1247	22171	32693	1108	19456	28111	1062	18566	26649	1015	17684	25221	969	16810	23825
5	-25	1256	23288	34547	1116	20441	29704	1070	19510	28161	1024	18587	26653	977	17672	25180
0	-20	1264	24801	37012	1125	21772	31817	1078	20781	30162	1032	19801	28547	986	18829	26969
0	-15	1275	26684	40014	1135	23426	34392	1089	22363	32604	1042	21310	30857	996	20268	29152
0	-10	1285	29006	43695	1146	25462	37543	1100	24308	35590	1053	23164	33680	1007	22034	31819
	-5	1296	32040	48481	1157	28110	41626	1110	26831	39450	1064	25569	37330	1018	24321	35261
	0	1307	35831	54440	1167	31406	46692	1121	29971	44239	1074	28553	41846	1028	27155	39517
	5	1317	40927	62433	1178	35813	53457	1131	34159	50620	1085	32530	47860	1038	30924	45172
	10	1327	47723	73024	1188	41651	62370	1142	39697	59015	1095	37776	55755	1049	35888	52588
1	-35	1226	19585	28980	1086	17168	24896	1040	16376	23594	993	15589	22320	947	14809	21076
4	-30	1234	20456	30468	1095	17941	26178	1048	17116	24810	1002	16298	23473	956	15487	22166
5	-25	1242	21437	32131	1103	18809	27609	1057	17948	26168	1010	17093	24758	964	16247	23382
0	-20	1251	22763	34333	1111	19975	29495	1065	19063	27955	1018	18158	26450	972	17262	24980
0	-15	1259	24443	37093	1119	21448	31855	1073	20469	30189	1026	19499	28560	980	18539	26972
0	-10	1267	26497	40445	1128	23246	34717	1081	22184	32896	1035	21134	31119	989	20095	29385
	-5	1278	29092	44634	1138	25515	38293	1092	24350	36280	1045	23196	34314	999	22056	32398
	0	1288	32292	49787	1149	28304	42678	1102	27006	40424	1056	25725	38227	1009	24458	36084
	5	1298	36519	56588	1159	31969	48442	1113	30494	45865	1066	29037	43353	1020	27602	40909
	10	1308	42026	65412	1169	36718	55884	1123	35004	52879	1076	33315	49954	1030	31653	47111
1	-35	1212	18118	27072	1073	15872	23238	1027	15134	22015	980	14401	20818	934	13675	19650
4	-30	1221	18890	28417	1081	16556	24396	1035	15791	23114	989	15031	21861	942	14276	20635
5	-25	1229	19757	29917	1090	17325	25687	1043	16526	24337	997	15735	23020	950	14949	21731
0	-20	1237	20922	31890	1097	18350	27377	1051	17508	25940	1005	16672	24535	958	15843	23163
0	-15	1245	22391	34350	1105	19640	29481	1059	18740	27932	1012	17846	26416	966	16962	24939
0	-10	1252	24183	37344	1113	21209	32035	1066	20236	30346	1020	19273	28698	974	18319	27089
	-5	1259	26467	41153	1120	23201	35275	1074	22136	33409	1027	21080	31586	981	20035	29807
	0	1269	29204	45678	1130	25589	39125	1083	24410	37045	1037	23245	35018	990	22092	33040
	5	1279	32744	51519	1140	28664	44078	1093	27338	41722	1047	26029	39426	1000	24734	37188
	10	1289	37264	58961	1150	32575	50366	1103	31055	47650	1057	29558	45008	1010	28079	42434



Figure 4-24 (Sheet 17 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
8000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1199	16771	25302	1060	14679	21698	1013	13991	20549	967	13309	19426	920	12630	18326
	-30	1207	17457	26521	1068	15289	22749	1021	14576	21545	975	13869	20370	929	13167	19220
	-25	1215	18224	27875	1076	15969	23914	1029	15228	22650	983	14493	21416	936	13763	20209
	-20	1223	19253	29651	1084	16876	25436	1037	16096	24092	991	15322	22780	944	14553	21496
	-15	1230	20542	31853	1091	18009	27318	1045	17178	25873	998	16354	24462	952	15537	23085
	-10	1238	22101	34511	1099	19375	29586	1052	18482	28018	1006	17597	26488	959	16719	24993
	-5	1245	24064	37859	1106	21090	32435	1059	20116	30709	1013	19153	29026	966	18198	27383
	0	1252	26441	41912	1112	23158	35872	1066	22088	33956	1020	21028	32086	973	19977	30261
	5	1259	29473	47071	1120	25793	40242	1074	24595	38078	1027	23409	35967	981	22238	33912
	10	1269	33224	53412	1130	29046	45606	1084	27689	43136	1037	26348	40730	991	25025	38389
1 3 5 0 0	-35	1188	15511	23593	1049	13569	20222	1003	12930	19147	956	12294	18095	910	11664	17068
	-30	1193	16139	24759	1054	14122	21218	1008	13459	20089	961	12800	18985	915	12145	17905
	-25	1201	16821	25987	1062	14727	22273	1015	14038	21089	969	13355	19932	923	12676	18801
	-20	1209	17732	27590	1069	15530	23646	1023	14807	22389	977	14089	21161	930	13376	19961
	-15	1216	18868	29566	1077	16529	25335	1030	15761	23988	984	15000	22672	938	14244	21386
	-10	1223	20229	31935	1084	17723	27356	1038	16902	25900	991	16086	24476	945	15278	23086
	-5	1230	21924	34892	1091	19206	29873	1044	18315	28276	998	17432	26717	952	16558	25197
	0	1237	23956	38439	1098	20977	32883	1051	20002	31117	1005	19038	29396	958	18081	27715
	5	1242	26554	42992	1103	23233	36733	1057	22149	34747	1010	21075	32810	964	20014	30924
	10	1249	29754	48579	1110	26005	41449	1063	24783	39190	1017	23577	36992	971	22384	34849
1 2 5 0 0	-35	1198	14268	21662	1058	12503	18608	1012	11922	17633	966	11344	16679	919	10769	15746
	-30	1194	14852	22853	1054	13004	19601	1008	12397	18565	962	11793	17552	915	11191	16559
	-25	1189	15519	24190	1050	13577	20719	1003	12937	19611	957	12303	18530	910	11671	17471
	-20	1194	16339	25681	1055	14298	21990	1009	13626	20813	962	12959	19663	916	12297	18540
	-15	1202	17344	27462	1062	15180	23509	1016	14470	22252	969	13764	21022	923	13064	19821
	-10	1208	18536	29580	1069	16228	25317	1023	15470	23960	976	14718	22635	930	13971	21341
	-5	1215	20007	32203	1076	17515	27548	1030	16698	26068	983	15886	24621	937	15083	23212
	0	1222	21753	35323	1082	19038	30195	1036	18149	28566	989	17267	26976	943	16394	25425
	5	1227	23960	39286	1088	20957	33548	1041	19975	31727	995	19003	29951	948	18039	28219
	10	1232	26666	44150	1093	23302	37650	1046	22203	35589	1000	21118	33584	954	20043	31628
1 2 5 0 0	-35	1208	13162	19919	1068	11553	17149	1022	11023	16264	976	10496	15398	929	9970	14550
	-30	1203	13659	20967	1064	11981	18024	1018	11429	17086	971	10878	16166	925	10332	15268
	-25	1199	14225	22140	1059	12467	19003	1013	11888	18003	967	11313	17025	920	10740	16068
	-20	1194	14984	23641	1054	13119	20259	1008	12506	19181	961	11895	18126	915	11289	17096
	-15	1188	15940	25485	1049	13941	21800	1002	13283	20626	956	12630	19480	910	11981	18360
	-10	1194	16999	27416	1054	14868	23442	1008	14168	22177	961	13472	20941	915	12782	19736
	-5	1200	18278	29749	1061	15989	25427	1014	15236	24050	968	14490	22708	922	13750	21398
	0	1206	19785	32505	1067	17305	27765	1021	16491	26258	974	15684	24788	928	14884	23353
	5	1211	21670	35973	1072	18945	30698	1026	18053	29024	979	17167	27389	933	16290	25796
	10	1216	23953	40184	1077	20926	34251	1031	19936	32369	984	18955	30534	938	17984	28747
1 1 5 0 0	-35	1218	12169	18335	1079	10700	15822	1033	10215	15018	986	9732	14231	940	9252	13462
	-30	1214	12596	19262	1075	11068	16597	1028	10563	15745	982	10062	14912	935	9562	14096
	-25	1209	13079	20296	1070	11483	17460	1023	10956	16554	977	10433	15669	930	9912	14802
	-20	1204	13726	21613	1064	12040	18563	1018	11484	17589	972	10932	16638	925	10382	15707
	-15	1198	14537	23221	1059	12739	19909	1012	12146	18853	966	11557	17821	920	10972	16813
	-10	1192	15512	25142	1052	13575	21513	1006	12938	20357	960	12305	19229	913	11676	18126
	-5	1185	16713	27501	1045	14604	23481	999	13911	22202	952	13223	20954	906	12540	19735
	0	1190	18018	29944	1051	15745	25554	1005	14999	24158	958	14258	22796	912	13523	21467
	5	1195	19637	32995	1056	17154	28133	1010	16341	26590	963	15532	25082	917	14731	23613
	10	1200	21575	36662	1061	18838	31227	1014	17940	29501	968	17052	27820	922	16172	26182
1 1 0 0 0	-35	1230	11274	16891	1090	9927	14609	1044	9483	13879	997	9040	13164	951	8600	12464
	-30	1225	11641	17714	1086	10245	15298	1039	9784	14526	993	9326	13770	946	8868	13028
	-25	1220	12055	18628	1080	10601	16061	1034	10122	15242	988	9645	14440	941	9169	13654
	-20	1214	12611	19791	1075	11081	17036	1029	10577	16157	982	10074	15296	936	9575	14455
	-15	1208	13305	21204	1069	11680	18220	1023	11144	17268	976	10611	16337	930	10081	15427
	-10	1202	14135	22882	1062	12393	19623	1016	11819	18584	970	11250	17571	923	10682	16578
	-5	1194	15150	24936	1055	13265	21338	1008	12644	20193	962	12028	19074	915	11414	17981
	0	1185	16352	27371	1046	14293	23366	999	13615	22091	953	12943	20848	906	12274	19634
	5	1179	17821	30306	1039	15552	25814	993	14807	24387	946	14067	22994	900	13333	21637
	10	1183	19475	33517	1044	16990	28521	997	16174	26935	951	15366	25390	905	14564	23884



Figure 4-24 (Sheet 18 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-35	1296	28889	41579	1156	25387	35822	1110	24246	33991	1063	23116	32201	1017	21999	30454
	-30	1307	30433	43995	1168	26755	37914	1122	25558	35980	1075	24373	34091	1029	23202	32247
	-25	1319	32163	46694	1180	28284	40244	1134	27023	38196	1087	25775	36194	1041	24542	34241
	-20	1331	34875	50806	1192	30661	43773	1145	29291	41539	1099	27940	39362	1052	26605	37236
	-15	1343	38092	55655	1203	33470	47923	1157	31972	45472	1110	30494	43082	1064	29037	40753
	-10	1354	42547	62316	1215	37340	53597	1168	35637	50839	1122	33999	48152	1076	32367	45536
	-5	1365	48395	70983	1226	42390	60945	1180	40457	57778	1133	38555	54696	1087	36686	51699
	0	1377	56537	82961	1237	49365	71031	1191	47069	67282	1144	44817	63641	1098	42609	60107
	5	1388	68456	100304	1248	59473	85509	1202	56619	80886	1156	53831	76409	1109	51105	72072
	10	1399	86965	126656	1259	74927	107227	1213	71148	101208	1167	67478	95405	1120	63911	89809
1 6 0 0	-35	1285	27474	39834	1146	24137	34301	1100	23049	32541	1053	21970	30819	1007	20904	29139
	-30	1297	28895	42088	1158	25398	36253	1112	24258	34397	1065	23129	32583	1019	22014	30813
	-25	1309	30482	44597	1170	26802	38421	1123	25603	36457	1077	24418	34540	1030	23246	32668
	-20	1321	32956	48397	1181	28973	41684	1135	27678	39552	1088	26398	37471	1042	25133	35440
	-15	1332	35872	52853	1193	31525	45502	1146	30113	43169	1100	28720	40894	1054	27345	38676
	-10	1343	39876	58923	1204	35008	50677	1158	33432	48065	1111	31878	45521	1065	30347	43042
	-5	1355	45073	66740	1215	39505	57312	1169	37710	54335	1123	35942	51437	1076	34202	48616
	0	1366	52193	77387	1226	45626	66299	1180	43518	62809	1134	41448	59417	1087	39414	56121
	5	1377	62394	92503	1237	54314	78957	1191	51738	74714	1145	49216	70600	1098	46747	66612
	10	1388	77734	114806	1248	67210	97434	1202	63888	92032	1155	60651	86813	1109	57499	81772
1 5 5 0 0	-35	1268	25303	37136	1129	22216	31946	1083	21208	30294	1036	20208	28678	990	19219	27101
	-30	1280	26546	39152	1141	23321	33692	1094	22267	31954	1048	21225	30257	1001	20192	28598
	-25	1292	27926	41383	1152	24544	35622	1106	23441	33789	1059	22349	31999	1013	21269	30252
	-20	1303	30060	44733	1164	26421	38501	1117	25235	36519	1071	24062	34585	1024	22902	32698
	-15	1314	32551	48625	1175	28605	41838	1129	27322	39684	1082	26053	37581	1036	24800	35530
	-10	1325	35926	53862	1186	31549	46309	1140	30129	43915	1093	28727	41581	1047	27343	39305
	-5	1336	40233	60501	1197	35291	51959	1151	33691	49255	1104	32114	46622	1058	30560	44058
	0	1347	46004	69363	1208	40273	59458	1162	38426	56334	1115	36608	53293	1069	34820	50337
	5	1358	54017	81591	1219	47140	69742	1173	44935	66018	1126	42770	62401	1080	40647	58891
	10	1369	65552	98928	1230	56924	84199	1183	54177	79594	1137	51494	75137	1090	48869	70820
1 5 0 0	-35	1254	23282	34536	1115	20433	29689	1069	19502	28146	1022	18577	26636	976	17662	25162
	-30	1263	24414	36444	1124	21435	31332	1077	20459	29703	1031	19495	28113	985	18539	26560
	-25	1274	25634	38472	1134	22516	33083	1088	21497	31368	1042	20489	29693	995	19489	28057
	-20	1285	27485	41441	1146	24147	35636	1099	23056	33788	1053	21978	31986	1006	20911	30227
	-15	1296	29627	44863	1157	26029	38573	1110	24855	36573	1064	23696	34624	1018	22549	32720
	-10	1307	32496	49418	1168	28537	42465	1121	27248	40258	1075	25976	38107	1029	24719	36009
	-5	1318	36104	55115	1179	31679	47319	1132	30242	44848	1086	28826	42442	1039	27427	40097
	0	1329	40845	62587	1189	35786	53655	1143	34150	50833	1097	32538	48084	1050	30949	45409
	5	1339	47257	72656	1200	41308	62150	1154	39393	58840	1107	37508	55621	1061	35656	52494
	10	1350	56173	86485	1211	48922	73736	1164	46601	69737	1118	44326	65858	1071	42094	62094
1 4 5 0 0	-35	1241	21437	32125	1102	18806	27599	1055	17943	26155	1009	17089	24746	962	16240	23367
	-30	1250	22427	33831	1110	19682	29067	1064	18783	27549	1018	17893	26067	971	17009	24618
	-25	1258	23520	35711	1119	20649	30684	1072	19709	29083	1026	18778	27520	980	17856	25994
	-20	1267	25177	38458	1127	22103	33035	1081	21099	31311	1035	20104	29626	988	19119	27982
	-15	1278	27032	41487	1138	23736	35637	1092	22660	33777	1045	21594	31960	999	20541	30190
	-10	1288	29486	45474	1149	25886	39047	1103	24713	37006	1056	23552	35014	1010	22404	33071
	-5	1299	32534	50404	1160	28546	43250	1113	27249	40982	1067	25968	38771	1021	24702	36615
	0	1310	36471	56771	1170	31966	48657	1124	30506	46090	1078	29065	43589	1031	27642	41153
	5	1320	41680	65182	1181	36469	55769	1135	34785	52797	1088	33126	49906	1042	31493	47095
	10	1331	48716	76433	1191	42509	65228	1145	40513	61703	1098	38551	58279	1052	36624	54955
1 4 0 0	-35	1227	19756	29909	1088	17321	25675	1042	16523	24326	995	15729	23006	949	14943	21717
	-30	1236	20625	31441	1097	18092	26994	1050	17260	25576	1004	16437	24192	957	15619	22839
	-25	1244	21580	33121	1105	18937	28439	1059	18071	26948	1012	17212	25491	966	16361	24069
	-20	1252	23022	35564	1113	20205	30531	1067	19283	28929	1020	18369	27365	974	17463	25837
	-15	1261	24677	38357	1121	21656	32918	1075	20669	31189	1028	19690	29500	982	18722	27853
	-10	1269	26822	41944	1130	23534	35980	1084	22461	34086	1037	21398	32237	991	20346	30433
	-5	1280	29417	46242	1141	25803	39648	1094	24625	37555	1048	23460	35514	1001	22308	33524
	0	1290	32716	51715	1151	28676	44301	1105	27363	41953	1058	26065	39663	1012	24783	37433
	5	1301	36995	58820	1161	32385	50316	1115	30891	47628	1069	29418	45012	1022	27963	42464
	10	1311	42636	68117	1172	37250	58154	1125	35509	55011	1079	33797	51958	1032	32111	48989



Figure 4-24 (Sheet 19 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ONFLAPS - 7⁰
9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1214	18220	27865	1074	15962	23899	1028	15221	22635	982	14486	21401	935	13755	20193
	-30	1222	18985	29243	1083	16642	25087	1036	15873	23762	990	15110	22468	943	14352	21203
	-25	1230	19824	30752	1091	17386	26385	1044	16586	24994	998	15792	23634	952	15005	22307
	-20	1238	21086	32934	1099	18496	28252	1052	17647	26762	1006	16805	25306	960	15971	23885
	-15	1246	22523	35411	1107	19758	30371	1060	18853	28767	1014	17956	27202	967	17066	25673
	-10	1254	24389	38614	1114	21390	33101	1068	20410	31349	1021	19439	29638	975	18477	27970
	-5	1261	26664	42509	1122	23375	36413	1075	22301	34477	1029	21239	32590	982	20187	30749
	0	1271	29461	47275	1131	25814	40466	1085	24626	38307	1038	23451	36202	992	22290	34151
	5	1281	33012	53337	1141	28900	45603	1095	27564	43156	1049	26245	40773	1002	24941	38451
	10	1291	37600	61122	1151	32868	52176	1105	31336	49352	1059	29825	46605	1012	28334	43931
1 3 5 0 0	-35	1200	16813	25972	1061	14718	22257	1014	14028	21071	968	13345	19914	921	12665	18782
	-30	1208	17490	27219	1069	15320	23330	1022	14606	22089	976	13898	20878	929	13194	19634
	-25	1216	18230	28578	1077	15976	24499	1030	15235	23198	984	14501	21929	937	13770	20687
	-20	1224	19337	30531	1084	16950	26170	1038	16168	24782	992	15391	23426	945	14619	22100
	-15	1231	20591	32739	1092	18053	28057	1046	17221	26568	999	16395	25113	953	15577	23693
	-10	1239	22203	35568	1099	19465	30470	1053	18568	28848	1006	17679	27265	960	16798	25721
	-5	1246	24149	38978	1106	21164	33370	1060	20189	31589	1014	19223	29852	967	18265	28156
	0	1252	26571	43245	1113	23274	36989	1067	22198	35004	1020	21132	33068	974	20077	31181
	5	1260	29584	48552	1121	25892	41481	1075	24689	39241	1028	23500	37059	982	22324	34932
	10	1270	33359	55145	1131	29166	47054	1084	27803	44496	1038	26458	42006	992	25130	39583
1 2 5 0 0	-35	1189	15500	24144	1050	13561	20680	1003	12922	19574	957	12288	18494	911	11659	17440
	-30	1194	16121	25344	1054	14106	21700	1008	13444	20539	961	12786	19405	915	12132	18296
	-25	1201	16775	26572	1062	14687	22756	1016	14001	21541	969	13319	20353	923	12643	19193
	-20	1209	17750	28327	1070	15547	24259	1023	14822	22962	977	14104	21697	930	13390	20460
	-15	1216	18848	30300	1077	16513	25945	1031	15747	24560	984	14985	23205	938	14231	21885
	-10	1223	20246	32809	1084	17739	28085	1038	16917	26582	991	16101	25115	945	15292	23683
	-5	1230	21920	35811	1091	19203	30638	1045	18313	28994	998	17430	27389	952	16556	25825
	0	1237	23979	39529	1097	20997	33791	1051	20022	31969	1005	19056	30193	958	18099	28460
	5	1243	26542	44186	1103	23222	37726	1057	22139	35679	1011	21068	33685	964	20006	31740
	10	1249	29741	49966	1110	25994	42604	1063	24773	40273	1017	23568	38006	971	22376	35797
1 2 5 0 0	-35	1199	14214	22103	1060	12458	18973	1013	11879	17974	967	11304	16997	920	10732	16042
	-30	1195	14783	23307	1055	12946	19977	1009	12342	18916	963	11742	17880	916	11144	16865
	-25	1190	15420	24638	1051	13493	21089	1004	12858	19957	958	12229	18853	912	11603	17774
	-20	1194	16302	26291	1055	14265	22493	1008	13594	21283	962	12929	20102	915	12268	18948
	-15	1201	17267	28061	1062	15114	24005	1015	14406	22714	969	13704	21454	923	13007	20223
	-10	1208	18486	30296	1069	16183	25910	1022	15427	24515	976	14677	23153	930	13933	21824
	-5	1215	19932	32950	1076	17449	28167	1029	16635	26647	983	15827	25163	936	15025	23715
	0	1221	21691	36206	1082	18984	30929	1035	18097	29253	989	17218	27618	942	16346	26023
	5	1227	23853	40240	1087	20863	34339	1041	19886	32467	994	18918	30643	948	17959	28864
	10	1232	26536	45236	1093	23189	38551	1046	22096	36434	1000	21016	34372	953	19946	32364
1 1 5 0 0	-35	1209	13073	20267	1070	11478	17436	1023	10952	16532	977	10429	15648	931	9909	14784
	-30	1205	13556	21323	1066	11894	18319	1019	11345	17359	973	10801	16423	926	10258	15505
	-25	1200	14092	22485	1061	12354	19289	1014	11781	18270	968	11212	17274	922	10646	16300
	-20	1195	14889	24091	1056	13040	20634	1009	12430	19531	963	11826	18455	917	11225	17404
	-15	1190	15801	25912	1050	13822	22155	1004	13172	20960	958	12526	19792	911	11883	18651
	-10	1192	16892	27994	1053	14774	23918	1007	14078	22622	960	13386	21355	914	12700	20120
	-5	1199	18147	30350	1060	15873	25921	1013	15126	24513	967	14385	23139	920	13648	21796
	0	1205	19658	33216	1065	17191	28350	1019	16383	26805	973	15581	25298	926	14784	23826
	5	1210	21492	36730	1071	18789	31322	1024	17903	29606	978	17025	27932	932	16155	26301
	10	1215	23741	41035	1076	20740	34952	1029	19759	33025	983	18787	31146	937	17825	29317
1 1 5 0 0	-35	1220	12055	18608	1081	10601	16044	1034	10121	15225	988	9644	14424	941	9169	13640
	-30	1215	12466	19538	1076	10956	16823	1030	10458	15957	983	9961	15107	937	9468	14278
	-25	1210	12920	20559	1071	11346	17675	1025	10828	16756	978	10311	15856	932	9797	14976
	-20	1205	13599	21965	1066	11932	18855	1020	11383	17863	973	10835	16892	927	10292	15945
	-15	1200	14369	23550	1060	12594	20180	1014	12010	19107	968	11429	18059	921	10851	17034
	-10	1193	15347	25543	1054	13434	21846	1007	12804	20669	961	12179	19520	914	11557	18398
	-5	1185	16515	27909	1046	14435	23820	1000	13751	22520	953	13072	21251	907	12397	20012
	0	1188	17842	30516	1049	15588	26019	1002	14848	24591	956	14113	23197	909	13383	21837
	5	1193	19408	33595	1054	16952	28622	1007	16146	27043	961	15347	25504	914	14553	24003
	10	1198	21307	37330	1058	18600	31770	1012	17714	30008	966	16836	28291	919	15964	26616



Figure 4-24 (Sheet 20 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7°**
ANTI - ICE SYSTEMS ON **10,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-35	1318	32313	46906	1178	28408	40415	1132	27138	38353	1085	25882	36339	1039	24642	34375
	-30	1330	34125	49769	1191	30010	42888	1144	28672	40703	1098	27352	38572	1051	26046	36490
	-25	1342	36453	53377	1203	32057	45993	1156	30629	43650	1110	29221	41365	1063	27831	39137
	-20	1354	39636	58203	1214	34838	50127	1168	33284	47568	1122	31752	45074	1075	30241	42643
	-15	1366	43587	64146	1226	38275	55200	1180	36560	52371	1133	34870	49615	1087	33206	46932
	-10	1377	49263	72608	1238	43182	62383	1192	41225	59158	1145	39300	56019	1099	37409	52968
	-5	1389	56653	83503	1250	49527	71581	1203	47243	67831	1157	45005	64191	1110	42808	60655
	0	1400	68023	100142	1261	59188	85500	1215	56379	80921	1168	53633	76485	1122	50549	72188
	5	1412	85225	124860	1272	73596	105933	1226	69940	100062	1179	66385	94396	1133	62929	88929
	10	1423	114814	300050	1283	97809	139338	1237	92563	131165	1191	87509	123331	1144	82635	115818
1 6 0 0	-35	1307	30616	44789	1168	26914	38577	1122	25708	36601	1075	24515	34672	1029	23336	32790
	-30	1319	32271	47442	1180	28378	40868	1134	27112	38781	1087	25860	36742	1041	24623	34753
	-25	1331	34388	50769	1192	30242	43734	1146	28895	41501	1099	27564	39321	1053	26250	37196
	-20	1343	37265	55193	1204	32761	47527	1157	31299	45096	1111	29858	42726	1065	28436	40417
	-15	1355	40807	60600	1216	35850	52149	1169	34244	49473	1123	32663	46866	1076	31104	44327
	-10	1366	45840	68220	1227	40211	58627	1181	38395	55597	1134	36607	52647	1088	34849	49778
	-5	1378	52302	77905	1239	45777	68822	1192	43680	63330	1146	41622	59938	1099	39599	56640
	0	1389	62040	92422	1250	54087	79004	1203	51548	74796	1157	49063	70717	1111	46631	66762
	5	1400	76330	113399	1261	66136	96432	1215	62913	91148	1168	59770	86040	1122	56708	81104
	10	1411	99736	146848	1272	85499	123786	1226	81066	116686	1179	76775	109857	1133	72621	103291
1 5 0 0	-35	1290	28039	41548	1151	24639	35755	1104	23528	33911	1058	22431	32112	1011	21344	30355
	-30	1302	29469	43895	1162	25906	37784	1116	24745	35842	1070	23597	33946	1023	22460	32094
	-25	1313	31284	46818	1174	27509	40305	1128	26280	38236	1081	25064	36215	1035	23863	34245
	-20	1325	33730	50667	1186	29656	43610	1139	28331	41369	1093	27023	39185	1047	25731	37054
	-15	1337	36708	55323	1197	32259	47595	1151	30816	45146	1105	29392	42759	1058	27986	40431
	-10	1348	40869	61784	1209	35878	53100	1162	34263	50353	1116	32672	47677	1070	31104	45072
	-5	1359	46102	69844	1220	40406	59939	1174	38570	56813	1127	36762	53771	1081	34985	50814
	0	1370	53760	81606	1231	46981	69851	1185	44807	66155	1138	42672	62564	1092	40577	59078
	5	1382	64539	97974	1242	56148	83534	1196	53476	79018	1149	50861	74640	1103	48304	70401
	10	1392	81106	122610	1253	70043	103896	1207	66558	98088	1160	63166	92481	1114	59864	87069
1 5 0 0	-35	1272	25730	38614	1133	22596	33197	1086	21571	31472	1040	20557	29789	994	19553	28145
	-30	1284	26972	40702	1145	23700	35005	1098	22631	33192	1052	21574	31423	1005	20526	29694
	-25	1295	28540	43286	1156	25086	37233	1110	23960	35310	1063	22845	33431	1017	21743	31599
	-20	1307	30634	46659	1168	26929	40133	1121	25721	38059	1075	24528	36037	1028	23348	34064
	-15	1318	33158	50702	1179	29141	43598	1132	27834	41343	1086	26544	39145	1040	25270	37003
	-10	1329	36634	56236	1190	32173	48320	1144	30726	45813	1097	29297	43368	1051	27888	40388
	-5	1340	40932	63033	1201	35906	54101	1155	34280	51277	1108	32677	48526	1062	31098	45850
	0	1351	47068	72734	1212	41199	62300	1166	39308	59011	1119	37448	55812	1073	35619	52704
	5	1362	55418	85828	1223	48347	73297	1177	46083	69364	1130	43860	65544	1084	41681	61840
	10	1373	67651	104697	1234	58709	89005	1187	55866	84106	1141	53091	79367	1095	50378	74781
1 4 0 0	-35	1257	23605	35834	1117	20719	30782	1071	19775	29174	1025	18839	27603	978	17912	26069
	-30	1266	24732	37804	1126	21715	32476	1080	20730	30783	1034	19753	29127	987	18785	27511
	-25	1277	26095	40105	1138	22923	34463	1091	21887	32669	1045	20861	30917	998	19845	29206
	-20	1288	27899	43079	1149	24514	37021	1103	23409	35096	1056	22315	33216	1010	21234	31383
	-15	1299	30054	46614	1160	26407	40054	1114	25218	37970	1067	24043	35938	1021	22881	33956
	-10	1310	32985	51397	1171	28969	44139	1125	27663	41838	1078	26373	39594	1032	25098	37406
	-5	1321	36555	57192	1182	32079	49075	1136	30627	46506	1089	29193	44001	1043	27779	41563
	0	1332	41546	65309	1193	36400	55950	1146	34736	52994	1100	33098	50119	1054	31484	47322
	5	1343	48153	75995	1204	42086	64955	1157	40133	61479	1111	38214	58103	1064	36327	54823
	10	1353	57471	90869	1214	50038	77403	1168	47660	73182	1121	45329	69089	1075	43046	65124
1 4 0 0	-35	1243	21660	33234	1104	19004	28530	1057	18133	27032	1011	17270	25568	964	16414	24138
	-30	1252	22640	34988	1112	19871	30039	1066	18965	28464	1019	18066	26925	973	17175	25422
	-25	1260	23861	37128	1121	20950	31878	1074	19996	30206	1028	19053	28576	982	18118	26983
	-20	1269	25461	39852	1130	22356	34211	1084	21342	32419	1037	20336	30667	991	19341	28959
	-15	1280	27313	42962	1141	23986	36882	1094	22900	34950	1048	21825	33065	1002	20762	31226
	-10	1291	29805	47129	1152	26169	40443	1105	24983	38321	1059	23812	36252	1012	22653	34234
	-5	1302	32801	52117	1162	28784	44696	1116	27478	42344	1070	26188	40053	1023	24913	37819
	0	1312	36907	58985	1173	32351	50523	1127	30874	47848	1080	29416	45241	1034	27978	42704
	5	1323	42219	67841	1184	36941	58003	1137	35235	54900	1091	33557	51883	1044	31902	48948
	10	1333	49486	79830	1194	43177	68073	1148	41149	64377	1101	39156	60789	1055	37199	57308



Figure 4-24 (Sheet 21 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS ON 10,000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1229	19896	30853	1089	17445	26465	1043	16641	25068	997	15844	23703	950	15052	22368
	-30	1237	20750	32421	1098	18203	27815	1052	17368	26348	1005	16540	24916	959	15719	23517
	-25	1246	21812	34325	1106	19141	29450	1060	18267	27899	1014	17400	26385	967	16539	24905
	-20	1254	23204	36756	1115	20366	31532	1068	19437	29871	1022	18516	28248	975	17604	26665
	-15	1262	24848	39612	1123	21808	33974	1076	20814	32182	1030	19830	30433	983	18855	28726
	-10	1271	27009	43329	1132	23700	37146	1086	22621	35184	1039	21551	33268	993	20493	31400
	-5	1282	29549	47662	1143	25923	40844	1096	24740	38681	1050	23572	36573	1003	22415	34517
	0	1292	32958	53527	1153	28890	45824	1107	27568	43386	1060	26262	41010	1014	24972	38696
	5	1303	37279	60954	1163	32635	52107	1117	31131	49313	1070	29646	46592	1024	28183	43947
	10	1313	43048	70783	1173	37608	60385	1127	35853	57110	1081	34125	53927	1034	32422	50833
1 3 5 0 0	-35	1214	18288	28662	1075	16024	24565	1029	15280	23260	982	14542	21985	936	13809	20739
	-30	1223	19037	30069	1084	16690	25777	1037	15918	24409	991	15154	23074	944	14394	21769
	-25	1231	19965	31772	1092	17510	27238	1045	16704	25794	999	15906	24386	952	15112	23008
	-20	1239	21175	33932	1100	18576	29088	1053	17723	27546	1007	16879	26043	961	16041	24574
	-15	1247	22595	36455	1108	19823	31246	1061	18915	29589	1015	18016	27973	968	17123	26394
	-10	1254	24472	39776	1115	21465	34075	1069	20482	32264	1022	19508	30497	976	18544	28775
	-5	1262	26696	43695	1122	23405	37407	1076	22331	35413	1030	21268	33467	983	20215	31570
	0	1272	29556	48760	1132	25899	41710	1086	24708	39476	1040	23531	37300	993	22366	35179
	5	1282	33108	55052	1143	28987	47040	1096	27647	44505	1050	26325	42039	1003	25018	39636
	10	1292	37760	63231	1153	33011	53940	1106	31471	51007	1060	29955	48156	1013	28459	45384
1 2 5 0 0	-35	1200	16822	26641	1061	14727	22812	1014	14037	21591	968	13353	20400	921	12673	19235
	-30	1208	17481	27909	1069	15312	23902	1022	14599	22625	976	13892	21380	930	13189	20162
	-25	1216	18295	29436	1077	16033	25213	1030	15289	23868	984	14552	22555	938	13821	21274
	-20	1224	19352	31363	1085	16964	26863	1038	16180	25431	992	15403	24033	945	14631	22668
	-15	1232	20584	33602	1092	18047	28777	1046	17216	27244	999	16391	25746	953	15573	24284
	-10	1239	22199	36526	1100	19462	31269	1053	18566	29599	1007	17678	27969	960	16797	26378
	-5	1246	24093	39946	1107	21118	34179	1060	20144	32347	1014	19181	30562	967	18225	28820
	0	1253	26553	44455	1113	23258	37998	1067	22183	35951	1021	21119	33956	974	20065	32011
	5	1261	29542	49931	1121	25856	42631	1075	24656	40321	1028	23468	38069	982	22295	35877
	10	1270	33340	56816	1131	29150	48446	1085	27790	45803	1038	26445	43229	992	25118	40726
1 2 5 0 0	-35	1190	15455	24681	1050	13522	21123	1004	12886	19990	958	12255	18883	911	11627	17801
	-30	1193	16061	25913	1054	14054	22170	1008	13395	20979	961	12738	19814	915	12087	18677
	-25	1201	16777	27286	1062	14689	23350	1015	14002	22096	969	13320	20871	922	12643	19676
	-20	1209	17703	29012	1069	15505	24826	1023	14783	23494	976	14066	22193	930	13355	20924
	-15	1216	18776	31006	1077	16450	26531	1030	15686	25108	984	14928	23718	937	14176	22362
	-10	1223	20172	33591	1084	17674	28734	1037	16854	27190	991	16042	25683	945	15236	24213
	-5	1230	21796	36593	1091	19095	31289	1044	18210	29604	998	17333	27960	951	16462	26355
	0	1236	23869	40500	1097	20902	34599	1051	19932	32727	1004	18969	30900	958	18017	29121
	5	1243	26384	45258	1103	23087	38620	1057	22011	36517	1011	20946	34468	964	19892	32472
	10	1249	29593	51287	1109	25865	43700	1063	24651	41301	1016	23451	38965	970	22265	36692
1 1 5 0 0	-35	1200	14127	22527	1060	12382	19322	1014	11809	18302	968	11238	17303	921	10670	16327
	-30	1196	14674	23736	1056	12853	20333	1010	12254	19249	964	11659	18190	917	11066	17155
	-25	1191	15357	25185	1052	13441	21545	1006	12810	20385	959	12183	19253	913	11560	18147
	-20	1193	16205	26851	1054	14179	22954	1007	13512	21713	961	12851	20503	914	12193	19320
	-15	1200	17143	28633	1061	15005	24476	1014	14302	23154	968	13605	21864	922	12912	20604
	-10	1207	18356	30929	1068	16069	26432	1021	15317	25002	975	14572	23607	928	13832	22245
	-5	1214	19756	33578	1074	17294	28685	1028	16487	27131	981	15685	25613	935	14891	24135
	0	1220	21514	36982	1080	18828	31570	1034	17948	29852	988	17077	28177	941	16211	26543
	5	1226	23620	41084	1087	20661	35037	1040	19693	33120	994	18735	31253	947	17785	29432
	10	1231	26286	46251	1091	22971	39390	1045	21890	37220	999	20819	35105	952	19759	33046
1 1 0 0 0	-35	1210	12954	20599	1071	11376	17709	1024	10854	16786	978	10337	15885	931	9821	15003
	-30	1206	13416	21658	1067	11773	18594	1020	11230	17616	974	10692	16661	927	10156	15728
	-25	1201	13990	22919	1062	12267	19649	1016	11699	18607	969	11134	17589	923	10573	16594
	-20	1196	14738	24486	1057	12910	20961	1011	12309	19839	964	11710	18742	918	11116	17672
	-15	1191	15618	26307	1051	13665	22483	1005	13023	21266	959	12385	20078	912	11751	18919
	-10	1190	16720	28506	1051	14621	24335	1004	13930	23008	958	13245	21714	911	12564	20451
	-5	1196	17931	30851	1057	15682	26329	1011	14943	24893	964	14209	23490	918	13482	22124
	0	1202	19431	33835	1063	16991	28857	1017	16191	27276	970	15396	25734	924	14609	24232
	5	1208	21207	37394	1069	18538	31865	1022	17663	30111	976	16797	28403	930	15938	26738
	10	1213	23431	41831	1073	20466	35602	1027	19498	33631	981	18538	31710	934	17586	29838



Figure 4-24 (Sheet 22 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7⁰**
ANTI - ICE SYSTEMS ON **11,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-35	1340	36519	53455	1201	32108	46051	1155	30677	43702	1108	29264	41411	1062	27870	39178
	-30	1353	38707	56914	1213	34034	49030	1167	32520	46532	1121	31027	44096	1074	29553	41721
	-25	1365	41759	61601	1226	36704	53050	1179	35068	50342	1133	33457	47705	1086	31868	45134
	-20	1377	45512	67297	1238	39972	57918	1191	38183	54952	1145	36424	52067	1099	34692	49258
	-15	1389	50712	75123	1250	44471	64569	1203	42463	61240	1157	40491	58004	1111	38553	54857
	-10	1401	57925	85870	1262	50668	73648	1215	48343	69805	1169	46065	66074	1123	43832	62453
	-5	1413	68198	100965	1274	59411	86301	1227	56616	81713	1181	53885	77268	1134	51214	72962
	0	1425	84705	124760	1285	73267	106016	1239	69667	100197	1192	66166	94579	1146	62761	89156
	5	1436	111930	272897	1297	95633	137076	1250	90591	129152	1204	85729	121550	1158	81037	114255
	8	1438	119773	311951	1299	101965	243757	1253	96485	137174	1206	91210	128989	1160	86131	121147
1 6 3 0 0	-35	1330	34447	50839	1190	30287	43784	1144	28936	41546	1098	27602	39362	1051	26283	37230
	-30	1342	36424	54014	1203	32033	46525	1156	30607	44148	1110	29200	41831	1064	27812	39573
	-25	1354	39170	58296	1215	34439	50199	1169	32906	47634	1122	31394	45134	1076	29903	42697
	-20	1366	42521	63462	1227	37364	54621	1181	35697	51825	1134	34054	49100	1088	32436	46447
	-15	1378	47118	70493	1239	41352	60607	1193	39494	57487	1146	37665	54449	1100	35866	51493
	-10	1390	53406	80027	1251	46773	68680	1204	44642	65106	1158	42551	61635	1111	40498	58262
	-5	1402	62194	93187	1262	54286	79748	1216	51761	75533	1170	49290	71446	1123	46869	67482
	0	1413	75916	113400	1274	65880	96578	1228	62704	91336	1181	59607	86267	1135	56588	81367
	5	1425	97532	144502	1285	83824	122101	1239	79547	115192	1193	75404	108543	1146	71388	102142
	8	1431	118075	323826	1292	100526	251451	1246	95121	136802	1199	89917	128613	1153	84904	120766
1 5 5 0 0	-35	1312	31332	46874	1173	27546	40345	1126	26313	38271	1080	25094	36246	1033	23889	34271
	-30	1324	33015	49648	1185	29035	42741	1138	27740	40548	1092	26462	38410	1046	25198	36323
	-25	1336	35333	53355	1197	31073	45929	1150	29689	43573	1104	28323	41276	1058	26975	39038
	-20	1348	38134	57785	1209	33526	49728	1162	32032	47175	1116	30558	44687	1069	29104	42263
	-15	1360	41916	63726	1220	36820	54798	1174	35172	51974	1128	33549	49225	1081	31948	46547
	-10	1371	46987	71636	1232	41212	61516	1186	39351	58323	1139	37519	55216	1093	35718	52195
	-5	1383	53888	82293	1244	47149	70517	1197	44986	66813	1151	42864	63215	1104	40780	59721
	0	1394	64246	98082	1255	55977	83748	1209	53341	79260	1162	50762	74911	1116	48238	70696
	5	1405	79614	121103	1266	68904	102831	1220	65524	97151	1173	62233	91666	1127	59028	86369
	10	1417	105234	283886	1277	90015	133328	1231	85292	125590	1184	80728	118158	1138	76317	111021
1 5 0 0	-35	1294	28578	43331	1155	25116	37265	1108	23986	35337	1062	22869	33455	1015	21763	31618
	-30	1306	30021	45772	1167	26396	39376	1120	25214	37344	1074	24046	35361	1027	22890	33426
	-25	1318	31995	49007	1178	28134	42160	1132	26879	39988	1086	25637	37868	1039	24410	35800
	-20	1329	34356	52839	1190	30209	45452	1144	28862	43110	1097	27531	40825	1051	26217	38599
	-15	1341	37504	57916	1202	32960	49793	1155	31486	47220	1109	30033	44714	1062	28597	42270
	-10	1352	41653	64570	1213	36567	55457	1167	34923	52577	1120	33302	49772	1074	31705	47042
	-5	1364	47176	73355	1224	41341	62900	1178	39462	59605	1132	37613	56399	1085	35794	53283
	0	1375	55207	86003	1236	48232	73547	1189	45995	69633	1143	43802	65836	1096	41649	62149
	5	1386	66588	103698	1247	57898	88318	1200	55132	83511	1154	52430	78859	1107	49787	74355
	10	1397	84252	130686	1258	72679	110569	1211	69038	104335	1165	65501	98325	1118	62059	92528
1 4 5 0 0	-35	1275	26125	40140	1136	22946	34487	1090	21908	32690	1043	20879	30934	997	19861	29221
	-30	1287	27370	42301	1148	24053	36357	1102	22970	34468	1055	21898	32623	1009	20838	30824
	-25	1299	29061	45143	1160	25547	38806	1113	24401	36793	1067	23267	34828	1020	22145	32912
	-20	1310	31070	48485	1171	27315	41679	1125	26093	39519	1078	24884	37412	1032	23689	35357
	-15	1322	33715	52864	1182	29632	45427	1136	28306	43070	1090	26995	40772	1043	25700	38532
	-10	1333	37150	58525	1194	32629	50256	1147	31162	47638	1101	29716	45088	1054	28288	42604
	-5	1344	41637	65874	1205	36524	56497	1158	34870	53534	1112	33241	50652	1066	31636	47847
	0	1355	47997	76207	1216	42007	65222	1169	40078	61763	1123	38182	58401	1077	36318	55135
	5	1366	56687	90199	1227	49441	76961	1180	47121	72808	1134	44847	68781	1087	42616	64875
	10	1377	69473	110544	1237	60256	93868	1191	57331	88670	1145	54475	83643	1098	51685	78783
1 4 0 0	-35	1259	23889	37156	1120	20970	31895	1073	20015	30222	1027	19069	28588	980	18131	26992
	-30	1268	25005	39168	1129	21959	33629	1083	20964	31868	1036	19977	30148	990	19000	28469
	-25	1280	26465	41682	1140	23250	35795	1094	22200	33924	1048	21161	32099	1001	20132	30317
	-20	1291	28184	44615	1152	24767	38319	1105	23652	36319	1059	22550	34369	1012	21458	32465
	-15	1302	30424	48421	1163	26735	41581	1116	25532	39409	1070	24344	37293	1024	23169	35229
	-10	1313	33297	53285	1174	29247	45733	1127	27929	43339	1081	26629	41008	1035	25344	38735
	-5	1324	36990	59507	1185	32462	51026	1138	30993	48343	1092	29545	45731	1046	28116	43187
	0	1335	42111	68084	1196	36896	58286	1149	35209	55193	1103	33549	52186	1056	31913	49261
	5	1346	48906	79394	1206	42739	67807	1160	40756	64164	1114	38808	60626	1067	36891	57189
	10	1356	58493	95238	1217	50916	81049	1171	48494	76607	1124	46121	72303	1078	43796	68133



Figure 4-24 (Sheet 23 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7⁰

ANTI - ICE SYSTEMS ON 11,000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1244	21842	34354	1105	19165	29471	1059	18288	27917	1012	17418	26398	966	16556	24917
	-30	1253	22811	36151	1114	20024	31017	1068	19112	29385	1021	18207	27790	975	17311	26234
	-25	1262	24113	38477	1123	21172	33013	1076	20209	31275	1030	19256	29580	983	18311	27924
	-20	1271	25626	41143	1132	22504	35300	1085	21483	33443	1039	20473	31631	993	19473	29864
	-15	1282	27538	44475	1143	24187	38157	1096	23092	36150	1050	22010	34194	1004	20939	32286
	-10	1293	29964	48691	1154	26312	41759	1107	25122	39561	1061	23945	37417	1014	22781	35327
	-5	1304	33038	54015	1165	28995	46293	1118	27680	43847	1072	26382	41465	1025	25099	39144
	0	1314	37213	61221	1175	32621	52403	1129	31133	49617	1082	29664	46903	1036	28216	44264
	5	1325	42621	70520	1186	37293	60252	1139	35572	57015	1093	33878	53870	1046	32208	50810
	10	1335	50005	83167	1196	43628	70863	1150	41579	66999	1103	39565	63248	1057	37588	59611
1 3 5 0 0	-35	1230	19994	31799	1091	17533	27257	1044	16725	25811	998	15924	24399	951	15129	23020
	-30	1238	20834	33398	1099	18278	28633	1053	17441	27118	1006	16610	25638	960	15786	24193
	-25	1247	21959	35458	1107	19271	30401	1061	18391	28793	1015	17518	27223	968	16653	25691
	-20	1255	23274	37842	1116	20430	32445	1069	19498	30728	1023	18576	29054	976	17661	27419
	-15	1263	24963	40887	1124	21911	35044	1077	20913	33189	1031	19925	31378	984	18945	29611
	-10	1272	27056	44627	1133	23745	38237	1087	22664	36209	1040	21594	34231	994	20535	32303
	-5	1283	29642	49225	1144	26006	42155	1097	24821	39914	1051	23650	37731	1004	22491	35602
	0	1293	33077	55338	1154	28997	47343	1108	27671	44814	1061	26361	42351	1015	25067	39953
	5	1304	37433	63079	1165	32774	53890	1118	31263	50988	1072	29774	48166	1025	28305	45420
	10	1314	43241	73373	1175	37779	62550	1128	36016	59143	1082	34281	55833	1035	32572	52618
1 2 5 0 0	-35	1215	18316	29454	1076	16049	25225	1029	15304	23878	983	14565	22563	936	13831	21279
	-30	1223	19048	30883	1084	16700	26456	1038	15929	25046	991	15164	23670	945	14405	22327
	-25	1231	20026	32717	1092	17564	28029	1046	16757	26538	999	15955	25081	953	15160	23660
	-20	1239	21164	34829	1100	18567	29838	1054	17716	28252	1007	16871	26702	961	16035	25192
	-15	1247	22616	37509	1108	19842	32127	1062	18934	30418	1015	18033	28748	969	17142	27122
	-10	1255	24433	40850	1116	21433	34974	1069	20451	33108	1023	19480	31289	976	18516	29513
	-5	1262	26679	44980	1123	23392	38482	1076	22319	36422	1030	21257	34413	984	20206	32456
	0	1272	29536	50225	1133	25884	42936	1086	24694	40628	1040	23518	38379	994	22355	36190
	5	1282	33086	56743	1143	28970	48454	1097	27632	45833	1050	26311	43283	1004	25006	40801
	10	1292	37731	65254	1153	32988	55628	1106	31451	52592	1060	29936	49640	1014	28443	46773
1 2 5 0 0	-35	1200	16791	27297	1061	14699	23355	1014	14011	22100	968	13328	20874	921	12649	19677
	-30	1208	17432	28580	1069	15270	24460	1022	14558	23147	976	13853	21867	929	13152	20616
	-25	1216	18286	30219	1077	16025	25865	1030	15282	24480	984	14545	23127	937	13813	21807
	-20	1224	19275	32097	1084	16897	27474	1038	16117	26004	992	15343	24569	945	14574	23168
	-15	1231	20529	34466	1092	18000	29498	1046	17171	27919	999	16348	26378	953	15532	24874
	-10	1239	22087	37399	1099	19364	31996	1053	18473	30281	1006	17589	28607	960	16714	26975
	-5	1246	23987	40986	1106	21025	35045	1060	20057	33161	1014	19098	31323	967	18147	29531
	0	1252	26421	45618	1113	23145	38969	1067	22076	36862	1020	21016	34807	974	19969	32808
	5	1260	29391	51271	1121	25726	43748	1074	24531	41366	1028	23351	39049	982	22184	36793
	10	1270	33159	58400	1131	28994	49763	1084	27640	47036	1038	26304	44383	991	24984	41803
1 1 5 0 0	-35	1191	15362	25172	1052	13445	21534	1005	12813	20374	959	12186	19242	913	11564	18138
	-30	1192	15962	26460	1053	13967	22621	1007	13312	21401	960	12659	20207	914	12012	19042
	-25	1200	16710	27929	1061	14630	23882	1014	13945	22593	968	13266	21336	922	12592	20109
	-20	1208	17574	29607	1068	15391	25317	1022	14675	23954	975	13962	22621	929	13256	21322
	-15	1215	18662	31710	1076	16349	27114	1029	15589	25652	983	14836	24227	936	14088	22836
	-10	1222	20005	34298	1083	17527	29319	1036	16714	27737	990	15908	26194	943	15108	24688
	-5	1229	21623	37432	1090	18943	31983	1043	18064	30252	997	17194	28566	950	16331	26921
	0	1235	23659	41425	1096	20718	35365	1050	19757	33445	1003	18803	31571	957	17859	29746
	5	1242	26134	46296	1102	22868	39479	1056	21803	37321	1010	20748	35219	963	19704	33173
	10	1247	29307	52528	1108	25615	44725	1061	24412	42258	1015	23224	39858	968	22048	37523
1 1 0 0 0	-35	1201	13999	22913	1062	12274	19643	1015	11705	18600	969	11141	17583	923	10579	16589
	-30	1197	14523	24120	1058	12725	20653	1011	12132	19548	965	11544	18470	919	10959	17417
	-25	1193	15227	25643	1053	13329	21926	1007	12705	20744	961	12085	19589	914	11468	18462
	-20	1191	16035	27330	1051	14027	23344	1005	13368	22078	959	12712	20840	912	12060	19632
	-15	1198	16984	29206	1058	14862	24945	1012	14166	23592	966	13474	22270	919	12786	20980
	-10	1205	18148	31500	1065	15884	26899	1019	15141	25438	973	14404	24013	926	13671	22621
	-5	1211	19533	34252	1072	17098	29239	1026	16299	27648	979	15506	26095	933	14719	24581
	0	1218	21250	37719	1078	18595	32174	1032	17726	30417	985	16863	28701	939	16008	27031
	5	1224	23308	41899	1084	20386	35706	1038	19431	33745	991	18484	31833	945	17547	29972
	10	1228	25924	47205	1089	22654	40173	1042	21585	37947	996	20529	35782	950	19483	33675



Figure 4-24 (Sheet 24 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7°**
ANTI - ICE SYSTEMS ON **12,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	-35	1364	41789	61646	1224	36723	53077	1178	35085	50366	1131	33471	47724	1085	31880	45150
	-30	1376	44577	66023	1237	39166	56836	1191	37419	53932	1144	35698	51103	1098	34005	48350
	-25	1389	48389	71843	1249	42482	61808	1203	40580	58641	1157	38709	55559	1110	36868	52560
	-20	1401	52921	78700	1262	46410	67650	1215	44317	64167	1169	42263	60782	1123	40246	57493
	-15	1413	60257	89700	1274	52709	76941	1228	50295	72933	1181	47929	69042	1135	45611	65267
	-10	1426	70038	104174	1286	61034	89080	1240	58173	84360	1193	55377	79788	1147	52646	75360
	-5	1438	85748	126886	1298	74230	107920	1252	70606	102031	1205	67082	96346	1159	63655	90859
	0	1449	111800	259894	1310	95668	137745	1264	90675	129857	1217	85857	122285	1171	81205	115015
	1	1452	119052	291451	1313	101540	231013	1266	96143	137308	1220	90948	129203	1173	85941	121431
	3	1457	136990	391950	1317	115885	298222	1271	109455	272886	1224	103295	249857	1178	97390	228850
1 6 0 0	-35	1353	39195	58334	1214	34456	50223	1167	32919	47653	1121	31405	45149	1074	29911	42708
	-30	1365	41686	62312	1226	36643	53644	1180	35012	50901	1133	33403	48227	1087	31819	45625
	-25	1378	45070	67565	1239	39596	58141	1192	37828	55162	1146	36088	52262	1099	34375	49439
	-20	1390	49059	73707	1251	43063	63383	1204	41131	60124	1158	39233	56956	1112	37366	53873
	-15	1402	55424	83427	1263	48548	71614	1217	46343	67897	1170	44178	64285	1124	42055	60778
	-10	1414	63755	96006	1275	55674	82201	1229	53097	77874	1182	50573	73677	1136	48103	69608
	-5	1426	76782	115263	1287	66691	98257	1240	63497	92956	1194	60385	87832	1148	57349	82876
	0	1438	97464	145077	1299	83888	122772	1252	79649	115887	1206	75542	109258	1159	71560	102876
	3	1445	116429	296874	1306	99355	234515	1259	94087	135963	1213	89012	127927	1166	84118	120220
	5	1450	134209	405767	1310	113596	306587	1264	107308	279992	1218	101280	255896	1171	95496	233978
1 5 0 0	7				1315	132641	465863	1269	124878	412954	1222	117487	367774	1176	110443	328738
	-35	1335	35352	53384	1195	31084	45945	1149	29699	43587	1103	28331	41286	1056	26979	39043
	-30	1347	37435	56806	1208	32921	48894	1161	31456	46386	1115	30012	43943	1069	28586	41561
	-25	1359	40238	61278	1220	35376	52731	1174	33802	50026	1127	32249	47389	1081	30720	44823
	-20	1371	43501	66446	1232	38225	57155	1186	36520	54218	1139	34841	51359	1093	33187	48575
	-15	1383	48599	74468	1244	42641	63971	1198	40723	60661	1151	38835	57440	1105	36980	54310
	-10	1395	55102	84610	1256	48241	72547	1210	46041	68754	1163	43881	65069	1117	41762	61492
	-5	1407	64904	99620	1268	56604	85143	1221	53958	80610	1175	51370	76217	1128	48837	71959
	0	1419	79606	121696	1279	68991	103479	1233	65640	97814	1186	62376	92341	1140	59197	87055
	5	1430	103377	260931	1291	88642	131972	1244	84060	124414	1198	79630	117150	1152	75343	110168
1 5 0 0	7	1435	117618	340335	1295	100194	263629	1249	94826	242332	1202	89656	131327	1156	84675	123315
	10				1302	124555	473373	1256	117376	418603	1209	110523	371975	1163	103976	331798
	-35	1316	32008	49028	1177	28142	42171	1131	26885	39996	1084	25641	37872	1038	24412	35802
	-30	1328	33766	51998	1189	29697	44735	1143	28374	42431	1096	27067	40184	1050	25776	37993
	-25	1340	36112	55844	1201	31759	48041	1155	30346	45568	1108	28951	43158	1062	27574	40809
	-20	1352	38815	60247	1213	34128	51818	1167	32609	49150	1120	31110	46549	1074	29633	44018
	-15	1364	42963	66967	1225	37736	57542	1178	36046	54564	1132	34383	51666	1086	32744	48845
	-10	1376	48142	75300	1237	42220	64614	1190	40311	61243	1144	38435	57968	1097	36589	54782
	-5	1387	55722	87302	1248	48731	74733	1202	46490	70784	1155	44291	66950	1109	42134	63229
	0	1399	66611	104281	1260	57994	88935	1213	55251	84137	1167	52570	79491	1120	49947	74992
1 4 0 0	5	1410	83075	129532	1271	71809	109815	1224	68261	103698	1178	64810	97796	1132	61453	92103
	10	1421	110832	340651	1282	94590	263203	1236	89567	135072	1189	84721	126990	1143	80044	119239
	-35	1297	29070	45158	1158	25551	38812	1112	24404	36797	1065	23268	34829	1019	22146	32912
	-30	1309	30566	47755	1170	26877	41056	1124	25676	38930	1077	24487	36855	1031	23313	34833
	-25	1321	32549	51094	1182	28625	43930	1136	27348	41658	1089	26086	39441	1043	24840	37282
	-20	1333	34812	54883	1194	30614	47185	1147	29250	44746	1101	27903	42368	1054	26573	40050
	-15	1345	38229	60580	1205	33596	52047	1159	32095	49348	1112	30614	46718	1066	29153	44157
	-10	1356	42421	67533	1217	37241	57962	1170	35566	54939	1124	33917	51998	1078	32292	49136
	-5	1367	48411	77327	1228	42414	66249	1182	40483	62760	1135	38584	59368	1089	36717	56072
	0	1379	56726	90761	1239	49538	77541	1193	47237	73394	1147	44981	69370	1100	42767	65467
1 4 0 0	5	1390	68684	109868	1251	59680	93465	1204	56819	88346	1158	54024	83394	1111	51293	78603
	10	1401	87317	139148	1261	75236	117548	1215	71445	110868	1169	67763	104432	1122	64185	98232
	-35	1278	26470	41691	1139	23252	35798	1093	22202	33926	1046	21160	32097	1000	20131	30314
	-30	1290	27751	43978	1151	24391	37776	1104	23293	35804	1058	22208	33882	1012	21135	32008
	-25	1302	29440	46897	1162	25881	40289	1116	24722	38193	1070	23576	36148	1023	22440	34152
	-20	1313	31350	50184	1174	27566	43118	1128	26334	40877	1081	25116	38691	1035	23912	36561
	-15	1325	34196	55065	1185	30057	47289	1139	28712	44826	1093	27384	42425	1046	26072	40087
	-10	1336	37634	60940	1197	33056	52296	1150	31571	49561	1104	30107	46899	1057	28662	44306
	-5	1347	42450	69063	1208	37233	59186	1161	35546	56068	1115	33885	53035	1069	32250	50087
	0	1358	48952	79929	1219	42836	68354	1172	40867	64711	1126	38932	61172	1080	37031	57737
1 4 0 0	5	1369	57944	94855	1230	50521	80859	1183	48146	76474	1137	45819	72223	1091	43539	68104
	10	1380	71170	116590	1241	61696	98892	1194	58692	93383	1148	55760	88058	1101	52898	82912



Figure 4-24 (Sheet 25 of 30)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-35	1261	24121	38488	1121	21175	33016	1075	20212	31277	1028	19256	29578	982	18311	27922
	-30	1270	25255	40587	1131	22181	34825	1085	21176	32994	1038	20180	31207	992	19195	29464
	-25	1282	26702	43155	1143	23462	37039	1096	22403	35096	1050	21356	33202	1003	20319	31353
	-20	1293	28328	46029	1154	24898	39514	1107	23778	37445	1061	22672	35429	1015	21577	33462
	-15	1304	30718	50244	1165	26955	43120	1119	25783	40861	1072	24583	38658	1026	23399	36513
	-10	1315	33570	55262	1176	29489	47400	1130	28163	44912	1083	26852	42486	1037	25558	40124
	-5	1326	37497	62089	1187	32906	53202	1141	31418	50393	1094	29949	47657	1048	28501	44997
	0	1337	42678	71034	1198	37391	60768	1152	35683	57532	1105	34000	54384	1059	32343	51324
	5	1348	49622	82982	1209	43361	70818	1162	41347	66995	1116	39369	63284	1069	37424	59681
	10	1359	59392	99711	1219	51686	84779	1173	49225	80110	1126	46813	75586	1080	44452	71207
1 3 5 0 0	-35	1246	21972	35472	1106	19279	30407	1060	18398	28798	1013	17523	27225	967	16657	25692
	-30	1254	22957	37353	1115	20153	32027	1069	19236	30335	1022	18325	28681	976	17424	27069
	-25	1263	24243	39723	1124	21287	34061	1077	20320	32261	1031	19362	30506	984	18413	28793
	-20	1273	25663	42317	1133	22539	36288	1087	21519	34374	1040	20508	32506	994	19507	30684
	-15	1284	27690	45989	1144	24321	39431	1098	23222	37350	1051	22133	35320	1005	21057	33343
	-10	1294	30080	50314	1155	26416	43124	1109	25223	40847	1062	24042	38625	1016	22876	36462
	-5	1305	33319	56115	1166	29242	48060	1120	27917	45511	1073	26607	43027	1027	25315	40611
	0	1316	37507	63580	1177	32879	54385	1130	31378	51481	1084	29899	48656	1037	28439	45907
	5	1326	42977	73325	1187	37604	62605	1141	35869	59228	1094	34160	55946	1048	32478	52759
	10	1337	50412	86556	1198	43981	73694	1151	41914	69657	1105	39885	65742	1058	37891	61944
1 2 5 0 0	-35	1230	20039	32730	1091	17573	28036	1045	16765	26543	998	15662	25085	952	15166	23662
	-30	1239	20889	34398	1100	18328	29472	1053	17487	27904	1007	16655	26375	960	15828	24882
	-25	1247	21994	36489	1108	19303	31265	1062	18422	29606	1015	17547	27984	969	16681	26404
	-20	1255	23227	38814	1116	20390	33258	1070	19462	31494	1023	18541	29771	977	17629	28092
	-15	1263	25004	42143	1124	21948	36098	1078	20949	34180	1031	19959	32308	985	18979	30483
	-10	1273	27055	45960	1134	23746	39355	1087	22665	37259	1041	21596	35218	994	20537	33227
	-5	1284	29750	50932	1144	26101	43586	1098	24912	41260	1051	23736	38993	1005	22574	36786
	0	1294	33167	57224	1155	29077	48925	1108	27747	46301	1062	26434	43746	1016	25138	41261
	5	1304	37541	65289	1165	32868	55740	1119	31355	52728	1072	29861	49797	1026	28388	46949
	10	1315	43328	75973	1175	37855	64720	1129	36089	61180	1082	34350	57742	1036	32640	54406
1 2 5 0 0	-35	1215	18292	30224	1076	16029	25867	1029	15285	24480	983	14547	23126	936	13814	21804
	-30	1223	19028	31708	1084	16683	27144	1037	15912	25691	991	15149	24275	945	14391	22892
	-25	1231	19984	33563	1092	17528	28735	1046	16722	27200	999	15922	25701	953	15129	24239
	-20	1239	21045	35615	1100	18464	30494	1054	17618	28867	1007	16779	27279	961	15947	25730
	-15	1247	22565	38533	1108	19798	32983	1061	18891	31220	1015	17994	29502	968	17103	27825
	-10	1255	24338	41931	1115	21349	35875	1069	20373	33956	1023	19405	32082	976	18446	30256
	-5	1262	26650	46351	1123	23367	39628	1076	22295	37498	1030	21235	35423	983	20184	33399
	0	1272	29476	51731	1132	25831	44193	1086	24644	41808	1040	23470	39485	993	22309	37724
	5	1282	33019	58488	1143	28912	49911	1096	27576	47200	1050	26258	44564	1003	24955	41998
	10	1292	37603	67259	1153	32878	57298	1106	31346	54158	1060	29837	51108	1013	28348	48143
1 5 0 0	-35	1199	16711	27928	1060	14628	23877	1013	13943	22588	967	13263	21329	920	12587	20100
	-30	1207	17352	29255	1068	15199	25019	1021	14491	23671	975	13789	22356	929	13091	21072
	-25	1215	18183	30907	1076	15934	26436	1029	15195	25014	983	14462	23627	936	13733	22271
	-20	1223	19101	32727	1083	16744	27995	1037	15971	26492	991	15204	25025	944	14442	23593
	-15	1230	20407	35297	1091	17893	30189	1045	17068	28566	998	16250	26982	952	15439	25439
	-10	1238	21920	38269	1098	19218	32719	1052	18334	30958	1005	17456	29240	959	16587	27566
	-5	1245	23858	42084	1105	20911	35958	1059	19948	34016	1013	18994	32124	966	18048	30279
	0	1252	26242	46791	1112	22988	39944	1066	21926	37777	1020	20875	35665	973	19834	33608
	5	1259	29202	52652	1119	25559	44894	1073	24372	42441	1027	23199	40053	980	22038	37729
	10	1268	32890	59954	1129	28758	51052	1083	27416	48243	1036	26090	45511	990	24781	42855
1 0 0	-35	1192	15223	25630	1053	13325	21913	1006	12700	20730	960	12080	19576	914	11464	18450
	-30	1190	15835	27012	1051	13854	23074	1005	13203	21822	958	12555	20599	912	11912	19406
	-25	1198	16560	28488	1059	14496	24340	1012	13817	23021	966	13143	21734	919	12473	20477
	-20	1205	17358	30109	1066	15201	25729	1020	14492	24337	973	13788	22978	927	13089	21652
	-15	1213	18488	32384	1073	16194	27669	1027	15441	26171	981	14694	24710	934	13952	23285
	-10	1220	19787	34999	1081	17334	29896	1034	16529	28276	988	15731	26696	941	14939	25155
	-5	1227	21423	38313	1087	18764	32710	1041	17894	30933	995	17031	29201	948	16174	27511
	0	1233	23405	42354	1094	20495	36134	1048	19543	34163	1001	18599	32242	955	17664	30371
	5	1239	25854	47372	1100	22623	40369	1054	21568	38153	1007	20522	35994	961	19489	33894
	10	1244	28945	53733	1105	25297	45718	1059	24109	43187	1012	22933	40723	966	21771	38327

 Figure 4-24 (Sheet 26 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS ON
FLAPS - 7°
13,000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1387	48533	72069	1248	42600	61988	1202	40689	58807	1155	38810	55711	1109	36962	52700
6	-30	1400	52260	77857	1261	45841	66932	1215	43779	63490	1168	41752	60142	1122	39762	56889
3	-25	1413	56967	85042	1274	49912	73044	1227	47651	69270	1181	45434	65604	1135	43258	62044
0	-20	1426	63514	94885	1287	55533	81366	1240	52985	77124	1194	50491	73010	1147	48048	69018
0	-15	1438	73780	110041	1299	64257	94067	1253	61237	89078	1206	58288	84248	1160	55411	79574
0	-10	1451	88455	131279	1311	76573	111685	1265	72840	105606	1219	69213	99741	1172	65685	94079
	-5	1463	114264	255123	1324	97801	141248	1277	92710	133191	1231	87801	125459	1184	83062	118036
	-4	1465	121364	282886	1326	103548	226274	1280	98064	140494	1233	92785	132240	1187	87700	124328
	-2	1470	138601	365363	1331	117340	283618	1285	110865	260839	1238	104661	239939	1192	98715	220714
1	-35	1376	45194	67763	1237	39696	58297	1191	37922	55306	1144	36175	52394	1098	34456	49561
6	-30	1389	48475	72955	1250	42559	62741	1204	40653	59518	1157	38779	56382	1111	36936	53332
3	-25	1402	52584	79345	1263	46126	68191	1216	44050	64676	1170	42012	61260	1123	40009	57939
0	-20	1414	58225	87996	1275	50990	75527	1229	48673	71608	1182	46401	67802	1136	44173	64107
0	-15	1427	66910	101091	1288	58409	86543	1241	55701	81987	1195	53054	77572	1148	50463	73292
0	-10	1439	79001	119007	1300	68632	101490	1253	63554	96033	1207	62161	90759	1161	59049	85660
	-5	1451	99396	148444	1312	85590	125709	1266	81283	118694	1219	77110	111939	1173	73067	105437
	-2	1459	117665	284694	1319	100499	227258	1273	95204	138071	1226	90102	129968	1180	85184	124328
	0	1463	134120	371582	1324	113705	286860	1278	107472	263517	1231	101494	242136	1185	95758	222500
	2				1329	131587	399891	1282	123986	360344	1236	116745	325484	1190	109838	294531
1	-35	1358	40336	61438	1219	35455	52857	1172	33875	50141	1126	32318	47497	1080	30782	44920
5	-30	1371	43020	65817	1231	37808	56616	1185	36123	53707	1139	34465	50877	1092	32830	48119
5	-25	1383	46340	71143	1244	40706	61175	1197	38888	58027	1151	37100	54965	1105	35340	51985
0	-20	1395	50819	78234	1256	44590	67211	1210	42587	63738	1163	40618	60361	1117	38683	57079
0	-15	1408	57532	88703	1268	50367	76065	1222	48072	72093	1176	45822	68238	1129	43614	64495
0	-10	1420	66554	102579	1280	58067	87721	1234	55365	83072	1188	52722	78566	1141	50136	74199
	-5	1432	80970	124284	1292	70220	105768	1246	66828	100010	1200	63526	94448	1153	60308	89075
	0	1444	103417	249867	1304	88804	132726	1258	84259	125197	1211	79861	117957	1165	75606	110996
	2	1448	116809	313622	1309	99698	247081	1263	94420	139667	1216	89334	131403	1170	84431	123479
	5	1455	145262	541775	1316	122376	389824	1270	115441	351586	1223	108813	317773	1177	102473	287675
	6				1318	132437	497363	1272	124711	439880	1226	117353	390974	1179	110339	348855
1	-35	1339	36190	55975	1200	31822	48144	1154	30404	45662	1107	29004	43243	1061	27623	40886
5	-30	1352	38413	59712	1212	33778	51359	1166	32276	48715	1120	30795	46140	1073	29333	43630
0	-25	1364	41137	64215	1225	36166	55223	1178	34557	52379	1132	32972	49610	1085	31409	46914
0	-20	1376	44754	70122	1237	39319	60269	1190	37563	57156	1144	35836	54129	1098	34135	51183
0	-15	1388	50058	78669	1249	43909	67523	1202	41930	64011	1156	39985	60597	1110	38074	57280
0	-10	1400	56989	89711	1261	49869	76848	1214	47587	72806	1168	45350	68884	1121	43155	65078
	-5	1412	67623	106356	1273	58923	90788	1226	56154	85920	1180	53448	81206	1133	50802	76642
	0	1423	83167	130207	1284	71986	110553	1238	68464	104452	1191	65037	98563	1145	61702	92879
	5	1435	109193	306531	1296	93411	142400	1249	88521	134148	1203	83801	126227	1156	79240	118623
	6	1437	116522	353867	1298	99346	273897	1252	94050	251702	1205	88946	133698	1159	84028	125550
	10										1214	117893	515643	1168	110772	447790
1	-35	1320	32610	51200	1181	28675	44014	1134	27393	41733	1088	26129	39512	1042	24879	37345
5	-30	1332	34471	54423	1193	30318	46792	1147	28969	44374	1100	27635	42015	1054	26319	39717
0	-25	1344	36732	58272	1205	32307	50101	1159	30871	47514	1112	29453	44992	1066	28055	42536
0	-20	1356	39695	63261	1217	34900	54372	1171	33347	51560	1124	31814	48821	1078	30305	46156
0	-15	1368	43961	70355	1229	38608	60409	1182	36879	57269	1136	35177	54215	1090	33500	51243
0	-10	1380	49409	79333	1241	43320	68020	1194	41359	64456	1148	39433	60993	1101	37538	57628
	-5	1391	57505	92476	1252	50265	79084	1206	47947	74882	1159	45673	70804	1113	43444	66849
	0	1403	68796	110536	1264	59856	94168	1217	57013	89056	1171	54237	84111	1124	51523	79324
	5	1414	86348	138272	1275	74548	117046	1229	70840	110473	1182	67236	104136	1136	63734	98029
	10	1425	116122	415452	1286	98893	313013	1240	93581	285495	1193	88465	260559	1147	83534	127761
1	-35	1301	29489	46985	1161	25921	40358	1115	24759	38256	1068	23608	36203	1022	22471	34203
4	-30	1313	31060	49787	1173	27313	42777	1127	26093	40553	1080	24886	38384	1034	23694	36271
0	-25	1324	32955	53110	1185	28986	45639	1139	27695	43270	1092	26418	40960	1046	25158	38711
0	-20	1336	35412	57370	1197	31142	49291	1150	29755	46732	1104	28387	44240	1058	27035	41812
0	-15	1348	38892	63338	1209	34179	54382	1162	32651	51549	1116	31146	48793	1069	29660	46108
0	-10	1359	43253	70764	1220	37968	60694	1174	36260	57516	1127	34578	54424	1081	32922	51417
	-5	1371	49570	81380	1231	43417	69664	1185	41438	65977	1139	39493	62396	1092	37580	58917
	0	1382	58062	95499	1243	50689	81521	1196	48329	77139	1150	46017	72890	1103	43749	68771
	5	1393	70564	116168	1254	61276	98714	1207	58328	93275	1161	55451	88016	1115	52641	82932
	10	1404	90030	147800	1265	77498	124675	1218	73571	117535	1172	69760	110661	1126	66061	104045



Figure 4-24 (Sheet 27 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 7° ANTI - ICE SYSTEMS ON 13.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST SECOND THIRD			FIRST SECOND THIRD			10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-35	1281	26742	43229	1141	23492	37094	1095	22432	35148	1049	21382	33248	1002	20342	31394
	-30	1292	28078	45682	1153	24680	39216	1107	23571	37163	1060	22474	35161	1014	21389	33209
	-25	1304	29681	48574	1165	26098	41708	1118	24930	39530	1072	23775	37406	1026	22633	35336
	-20	1316	31738	52247	1176	27908	44861	1130	26662	42521	1084	25430	40239	1037	24212	38015
	-15	1327	34610	57324	1188	30422	49198	1141	29061	46626	1095	27718	44120	1049	26392	41681
	-10	1338	38153	63552	1199	33511	54502	1153	32007	51642	1106	30523	48858	1060	29059	46148
	-5	1350	43179	72283	1210	37866	61900	1164	36151	58626	1117	34460	55441	1071	32796	52346
	0	1361	49739	83595	1221	43517	71436	1175	41516	67614	1129	39550	63903	1082	37617	60299
	5	1372	58998	99553	1232	51425	84788	1186	49005	80168	1139	46633	75690	1093	44309	71352
	10	1382	72558	122688	1243	62872	103954	1197	59804	98129	1150	56810	92502	1104	53889	87068
1 3 5 0 0	-35	1262	24277	39785	1123	21314	34108	1076	20344	32303	1030	19385	30544	983	18433	28827
	-30	1272	25450	42016	1133	22354	36030	1086	21341	34128	1040	20339	32273	993	19346	30464
	-25	1283	26815	44549	1144	23564	38215	1098	22502	36204	1051	21451	34243	1005	20411	32331
	-20	1295	28551	47740	1155	25094	40955	1109	23968	38805	1063	22853	36707	1016	21749	34661
	-15	1306	30945	52100	1167	27196	44685	1120	25974	42334	1074	24768	40046	1027	23574	37814
	-10	1317	33859	57384	1178	29744	49191	1131	28406	46598	1085	27085	44073	1038	25780	41614
	-5	1328	37919	64669	1189	33275	55375	1142	31769	52439	1096	30285	49583	1049	28820	46804
	0	1339	43094	73908	1200	37754	63187	1153	36028	59808	1107	34330	56524	1060	32656	53332
	5	1350	50157	86564	1210	43823	73818	1164	41788	69816	1117	39787	65932	1071	37823	62165
	10	1360	60032	104173	1221	52237	88499	1175	49748	83602	1128	47309	78859	1082	44922	74270
1 2 5 0 0	-35	1246	22029	36547	1107	19331	31310	1061	18448	29647	1014	17571	28021	968	16703	26437
	-30	1255	23046	38546	1116	20232	33029	1069	19310	31276	1023	18398	29566	977	17493	27898
	-25	1264	24256	40880	1124	21299	35031	1078	20333	33175	1032	19375	31364	985	18426	29597
	-20	1273	25756	43733	1134	22623	37479	1088	21599	35494	1041	20585	33559	995	19581	31672
	-15	1284	27771	47510	1145	24394	40711	1099	23292	38555	1052	22201	36453	1006	21122	34405
	-10	1295	30195	52039	1156	26518	44576	1109	25320	42212	1063	24136	39909	1017	22965	37666
	-5	1306	33516	58189	1167	29415	49804	1120	28081	47152	1074	26765	44570	1027	25464	42057
	0	1317	37664	65850	1177	33016	56292	1131	31511	53276	1085	30025	50342	1038	28560	47489
	5	1327	43173	76094	1188	37775	64924	1141	36031	61407	1095	34316	57993	1049	32627	54677
	10	1338	50602	89897	1198	44146	76481	1152	42072	72275	1105	40035	68195	1059	38035	64241
1 2 5 0 0	-35	1230	20016	33615	1091	17554	28775	1045	16746	27237	998	15944	25734	952	15150	24270
	-30	1239	20888	35379	1100	18327	30292	1053	17487	28675	1007	16655	27099	960	15828	25558
	-25	1247	21921	37430	1108	19240	32053	1062	18362	30345	1015	17491	28678	969	16628	27053
	-20	1255	23216	39973	1116	20381	34229	1070	19453	32406	1023	18533	30627	977	17622	28893
	-15	1263	24971	43377	1124	21919	37132	1078	20922	35152	1031	19933	33219	985	18955	31337
	-10	1273	27036	47355	1134	23729	40524	1087	22649	38359	1041	21581	36249	994	20523	34193
	-5	1283	29775	52593	1144	26123	44979	1098	24933	42570	1051	23756	40222	1005	22593	37937
	0	1294	33137	59017	1155	29051	50428	1108	27722	47713	1062	26411	45072	1015	25115	42502
	5	1304	37506	67442	1165	32838	57540	1119	31326	54418	1072	29833	51382	1026	28362	48432
	10	1314	43224	78497	1175	37768	66826	1129	36007	63157	1082	34272	59594	1036	32566	56137
1 1 5 0 0	-35	1214	18205	30946	1075	15952	26466	1028	15211	25041	982	14476	23650	936	13748	22295
	-30	1222	18957	32512	1083	16619	27811	1037	15852	26318	990	15090	24859	944	14335	23438
	-25	1230	19845	34323	1091	17405	29367	1045	16605	27792	998	15811	26256	952	15023	24757
	-20	1238	20953	36558	1099	18383	31280	1053	17540	29604	1006	16704	27968	960	15876	26375
	-15	1246	22444	39528	1107	19692	33814	1061	18791	32000	1014	17897	30231	968	17012	28508
	-10	1254	24210	43036	1115	21238	36800	1068	20266	34823	1022	19303	32895	975	18349	31016
	-5	1261	26539	47658	1122	23270	40722	1075	22202	38524	1029	21146	36384	983	20101	34300
	0	1270	29313	53148	1131	25688	45376	1085	24507	42918	1038	23339	40525	992	22184	38195
	5	1281	32827	60169	1141	28743	51311	1095	27416	48515	1048	26104	45793	1002	24809	43148
	10	1291	37316	69186	1151	32627	58899	1105	31108	55660	1058	29609	52511	1012	28132	49454
1 1 0 0 0	-35	1197	16573	28516	1058	14506	24361	1011	13826	23039	965	13151	21750	918	12480	20491
	-30	1205	17226	29911	1066	15086	25560	1019	14382	24176	973	13684	22827	927	12981	21510
	-25	1213	17994	31521	1074	15767	26942	1027	15034	25485	981	14308	24066	934	13587	22681
	-20	1221	18948	33495	1081	16608	28631	1035	15840	27086	988	15078	25579	942	14322	24109
	-15	1228	20224	36102	1089	17730	30855	1042	16911	29188	996	16100	27564	950	15296	25981
	-10	1236	21720	39156	1096	19041	33455	1050	18164	31647	1003	17293	29883	957	16431	28165
	-5	1243	23659	43127	1103	20735	36824	1057	19779	34828	1011	18832	32882	964	17892	30985
	0	1250	25979	47890	1110	22756	40856	1064	21704	38630	1017	20662	36462	971	19631	34352
	5	1256	28911	53981	1117	25301	45993	1070	24124	43468	1024	22962	41013	977	21810	38622
	10	1266	32494	61447	1126	28409	52283	1080	27082	49394	1034	25771	46584	987	24476	43854



Figure 4-24 (Sheet 28 of 30)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 7⁰**
ANTI - ICE SYSTEMS ON **14,000 FEET**

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-35	1412	57350	85631	1273	50232	73525	1226	47950	69717	1180	45714	66020	1133	43520	62430
	-30	1425	62526	93558	1286	54692	80250	1239	52189	76073	1193	49739	72022	1147	47340	68092
	-25	1438	68754	102994	1299	60028	88220	1252	57251	83595	1206	54537	79114	1160	51884	74772
	-20	1451	79052	118178	1312	68754	100923	1265	65498	95546	1219	62325	90346	1173	59232	85318
	-15	1464	94173	139972	1325	81404	118967	1278	77404	112463	1232	73523	106194	1185	69755	100149
	-10	1476	119243	256681	1337	101964	208357	1291	96635	139125	1244	91501	131044	1198	86552	123292
1 6 3 0 0	-7	1484	143984	356951	1345	121770	279731	1298	115021	258076	1252	108566	238101	1205	102384	219631
	-35	1401	52908	79854	1262	46397	68607	1215	44305	65065	1169	42251	61621	1122	40232	58274
	-30	1414	57373	86837	1275	50262	74550	1228	47983	70686	1182	45748	66934	1135	43556	63291
	-25	1427	62682	95059	1288	54834	81520	1241	52327	77272	1195	49873	73152	1148	47468	69153
	-20	1440	71304	108062	1300	62184	92449	1254	59287	87568	1207	56457	82841	1161	53693	78264
	-15	1452	83630	126280	1313	72581	107628	1267	69099	101829	1220	65708	96225	1174	62408	90813
1 5 5 0 0	-10	1465	103235	154542	1326	88854	130864	1279	84375	123565	1233	80041	116542	1186	75844	109784
	-7	1472	121628	281586	1333	103838	226321	1287	98361	210294	1240	93088	134650	1194	88010	126618
	-5	1477	138051	357589	1338	116997	279666	1291	110579	257851	1245	104431	237742	1199	98535	219163
	-3				1343	134006	374111	1296	126286	339797	1250	118935	309090	1204	111926	281463
	-35	1382	46591	71550	1243	40916	61507	1196	39085	58336	1150	37285	55253	1103	35512	52251
	-30	1395	50139	77289	1256	44007	66413	1209	42033	62984	1163	40093	59650	1116	38186	56409
1 5 5 0 0	-25	1408	54289	83948	1268	47606	72086	1222	45461	68353	1175	43354	64725	1129	41287	61203
	-20	1420	60861	94226	1281	53257	80777	1234	50825	76555	1188	48443	72460	1142	46109	68487
	-15	1433	69932	108170	1293	60989	92487	1247	58146	87584	1201	55369	82836	1154	52654	78237
	-10	1445	83612	128791	1306	72515	109637	1259	69017	103684	1213	65614	97936	1166	62300	92383
	-5	1457	105871	246340	1318	90935	136395	1271	86292	128687	1225	81805	121280	1179	77464	114158
	-3	1462	118521	302809	1323	101229	240918	1276	95896	223173	1230	90760	133945	1184	85809	125923
1 5 0 0	0	1469	145557	480990	1330	122807	357944	1284	115909	325618	1237	109314	296565	1191	103005	270333
	1				1332	132507	434301	1286	124853	390075	1240	117562	351321	1193	110607	317089
	-35	1363	41333	64544	1224	36331	55493	1177	34711	52629	1131	33117	49843	1084	31544	47129
	-30	1375	44202	69341	1236	38842	59604	1190	37111	56530	1143	35406	53536	1097	33728	50625
	-25	1388	47512	74837	1249	41731	64306	1202	39866	60983	1156	38033	57752	1109	36229	54610
	-20	1400	52649	83153	1261	46176	71369	1215	44096	67660	1168	42052	64054	1122	40046	60554
1 5 0 0	-15	1413	59545	94154	1273	52101	80660	1227	49721	76426	1181	47387	72317	1134	45099	68330
	-10	1425	69543	109853	1286	60616	93820	1239	57778	88810	1193	55005	83959	1146	52294	79261
	-5	1437	84845	133388	1298	73479	113340	1251	69900	107116	1205	66420	101111	1158	63033	95314
	0	1449	109467	291949	1309	93773	143448	1263	88910	135214	1217	84213	127307	1170	79675	119714
	1	1451	116521	330419	1312	99498	259672	1265	94245	239673	1219	89183	134538	1173	84303	126424
	5				1321	131671	532057	1275	124022	469363	1228	116736	416250	1182	109788	370674
1 4 5 0 0	6													1184	118777	485423
	-35	1343	36887	58542	1204	32437	50321	1158	30993	47718	1111	29567	45181	1065	28161	42711
	-30	1356	39241	62605	1216	34505	53812	1170	32972	51032	1124	31459	48323	1077	29967	45685
	-25	1368	41925	67213	1229	36859	57765	1182	35220	54780	1136	33606	51874	1090	32015	49046
	-20	1380	46021	74068	1241	40422	63607	1195	38616	60307	1148	36837	57096	1102	35088	53975
	-15	1392	51396	82953	1253	45071	71143	1207	43037	67426	1160	41039	63814	1114	39076	60307
1 4 5 0 0	-10	1404	58954	95283	1265	51559	81537	1219	49193	77225	1172	46873	73041	1126	46600	68984
	-5	1416	70013	113037	1277	60959	96382	1230	58081	91181	1184	55272	86150	1138	52526	81280
	0	1428	86594	139190	1289	74860	118004	1242	71170	111437	1196	67585	105106	1149	64098	99000
	5	1439	114949	367885	1300	98104	284491	1254	92904	261357	1207	87891	135832	1161	83058	127564
	6	1442	123029	438899	1302	104610	330405	1256	98953	301338	1210	93514	275023	1163	88279	251107
	8	1446	143177	764165	1307	120613	508081	1261	113769	449641	1214	107227	399737	1168	100967	356641
1 4 5 0 0	-35	1323	33079	53332	1184	29089	45819	1138	27792	43438	1091	26510	41117	1045	25243	38855
	-30	1336	35033	56813	1196	30812	48815	1150	29442	46283	1104	28089	43816	1057	26752	41411
	-25	1348	37239	60725	1208	32754	52179	1162	31300	49475	1116	29865	46841	1069	28448	44276
	-20	1360	40557	66462	1220	35652	57079	1174	34065	54114	1128	32501	51229	1081	30958	48420
	-15	1372	44832	73772	1232	39368	63299	1186	37605	59996	1139	35868	56783	1093	34160	53660
	-10	1383	50696	83692	1244	44435	71697	1198	42421	67923	1151	40441	64255	1105	38497	60695
1 4 5 0 0	-5	1395	58983	97536	1256	51536	83338	1209	49153	78886	1163	46819	74571	1116	44530	70386
	0	1406	70783	117024	1267	61545	99586	1221	58613	94150	1174	55749	88890	1128	52952	83805
	5	1418	89363	147320	1279	77064	124520	1232	73206	117471	1186	69461	110682	1139	65822	104142
	8	1425	106112	355720	1285	90810	146224	1239	86062	137681	1192	81475	129482	1146	77041	121612



Figure 4-24 (Sheet 29 of 30)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-35	1303	29781	48760	1164	26181	41858	1117	25008	39670	1071	23848	37536	1025	22701	35456
	-30	1315	31417	51767	1176	27630	44453	1129	26396	42133	1083	25177	39873	1037	23973	37671
	-25	1327	33251	55125	1188	29249	47343	1141	27947	44878	1095	26662	42477	1048	25391	40136
	-20	1339	35974	59984	1200	31636	51502	1153	30227	48818	1107	28837	46204	1060	27464	43658
	-15	1350	39429	66091	1211	34651	56710	1165	33103	53745	1118	31576	50860	1072	30072	48053
	-10	1362	44075	74226	1223	38683	63616	1176	36941	60269	1130	35227	57016	1083	33538	53853
	-5	1373	50457	85296	1234	44187	72963	1188	42171	69085	1141	40189	65319	1095	38242	61663
	0	1385	59194	100347	1245	51661	85586	1199	49252	80962	1153	46893	76483	1106	44579	72141
	5	1396	72154	122561	1257	62625	104036	1210	59603	98269	1164	56655	92697	1117	53776	87312
	8	1402	83086	141073	1263	71761	119255	1217	68197	112500	1170	64729	105987	1124	61356	99710
1 3 5 0 0	-35	1282	26895	44704	1143	23630	38340	1097	22565	36321	1050	21509	34350	1004	20465	32430
	-30	1294	28277	47324	1155	24857	40602	1109	23742	38470	1062	22638	36391	1016	21546	34364
	-25	1306	29816	50231	1167	26220	43108	1120	25047	40848	1074	23888	38647	1027	22741	36501
	-20	1317	32075	54390	1178	28206	46672	1132	26946	44226	1085	25701	41844	1039	24472	39524
	-15	1329	34905	59554	1190	30683	51083	1143	29311	48402	1097	27957	45792	1050	26619	43250
	-10	1340	38645	66328	1201	33941	56844	1155	32417	53849	1108	30914	50935	1062	29431	48099
	-5	1351	43669	75358	1212	38294	64491	1166	36559	61067	1119	34849	57737	1073	33167	54503
	0	1362	50331	87298	1223	44031	74548	1177	42006	70542	1130	40015	66654	1084	38060	62881
	5	1373	59777	104239	1234	52094	88705	1188	49640	83848	1141	47235	79142	1095	44880	74588
	8	1380	67375	117779	1241	58524	99936	1194	55709	94376	1148	52960	89002	1101	50272	83806
1 2 5 0 0	-35	1263	24324	41015	1123	21356	35140	1077	20386	33276	1031	19425	31457	984	18472	29682
	-30	1273	25526	43375	1134	22422	37173	1087	21407	35205	1041	20403	33286	994	19407	31413
	-25	1284	26826	45909	1145	23576	39359	1099	22515	37282	1052	21464	35256	1006	20424	33281
	-20	1296	28718	49500	1156	25242	42438	1110	24109	40200	1063	22987	38018	1017	21878	35893
	-15	1307	31060	53911	1168	27298	46211	1121	26073	43772	1075	24862	41397	1028	23664	39082
	-10	1318	34112	59621	1179	29965	51076	1132	28617	48373	1086	27287	45742	1039	25972	43180
	-5	1329	38135	67105	1190	33465	57427	1143	31950	54370	1097	30458	51399	1050	28988	48508
	0	1340	43335	76780	1201	37964	65598	1154	36228	62076	1108	34521	58656	1061	32838	55331
	5	1351	50447	90083	1211	44075	76763	1165	42027	72584	1118	40015	68529	1072	38039	64598
	8	1357	55965	100382	1218	48786	83558	1171	46486	80655	1125	44233	76102	1078	42022	71690
1 2 5 0 0	-35	1246	21985	37552	1107	19294	32152	1061	18413	30437	1014	17538	28762	968	16672	27131
	-30	1255	23023	39662	1116	20213	33965	1069	19292	32155	1023	18381	30391	977	17478	28672
	-25	1264	24170	41987	1124	21225	35959	1078	20263	34048	1032	19309	32183	985	18363	30363
	-20	1273	25793	45175	1134	22654	38688	1088	21629	36632	1041	20613	34626	995	19608	32672
	-15	1284	27751	48977	1145	24377	41943	1099	23276	39714	1052	22186	37541	1006	21108	35425
	-10	1295	30270	53842	1156	26583	46091	1109	25382	43638	1063	24195	41248	1017	23021	38922
	-5	1306	33535	60123	1167	29432	51429	1120	28097	48680	1074	26780	46005	1027	25479	43403
	0	1317	37666	68091	1177	33018	58171	1131	31513	55043	1085	30028	52001	1038	28562	49043
	5	1327	43152	78771	1188	37757	67163	1141	36015	63512	1095	34300	59965	1049	32612	56524
	8	1333	47289	86835	1194	41313	73921	1148	39388	69866	1101	37496	65933	1055	35636	62120
1 1 5 0 0	-35	1230	19904	34433	1090	17454	29455	1044	16651	27874	997	15853	26330	951	15063	24826
	-30	1238	20788	36287	1099	18239	31050	1052	17402	29385	1006	16574	27763	960	15752	26181
	-25	1246	21759	38320	1107	19098	32795	1061	18227	31042	1014	17362	29330	968	16505	27662
	-20	1255	23148	41138	1115	20320	35203	1069	19395	33321	1023	18478	31485	976	17568	29695
	-15	1263	24843	44547	1123	21806	38111	1077	20814	36071	1031	19831	34082	984	18857	32143
	-10	1272	26973	48803	1133	23673	41737	1086	22594	39497	1040	21528	37316	993	20472	35192
	-5	1282	29651	54128	1143	26014	46265	1097	24829	43777	1050	23656	41354	1004	22497	38996
	0	1293	32977	60776	1153	28910	51898	1107	27588	49094	1061	26282	46366	1014	24992	43712
	5	1303	37285	69498	1164	32645	59255	1117	31141	56027	1071	29658	52890	1025	28195	49842
	8	1309	40459	79590	1170	35386	64677	1124	33746	61131	1077	32129	57686	1031	30536	54342
1 1 5 0 0	-35	1212	18039	31610	1073	15804	27013	1026	15069	25552	980	14341	24127	934	13618	22738
	-30	1220	18798	33250	1081	16478	28422	1035	15717	26890	988	14960	25393	942	14210	23934
	-25	1228	19628	35040	1089	17214	29960	1043	16422	28347	996	15635	26772	950	14856	25239
	-20	1236	20810	37506	1097	18255	32068	1051	17418	30342	1004	16586	28658	958	15762	27017
	-15	1244	22242	40468	1105	19513	34595	1059	18619	32732	1012	17732	30915	966	16854	29146
	-10	1252	24041	44182	1112	21087	37753	1066	20121	35716	1020	19164	33731	973	18215	31796
	-5	1259	26307	48860	1120	23065	41722	1073	22005	39461	1027	20958	37261	981	19920	35118
	0	1268	29049	54546	1129	25454	46537	1082	24282	44005	1036	23123	41540	989	21977	39143
	5	1278	32485	61774	1139	28441	52641	1092	27126	49759	1046	25828	46957	999	24544	44232
	8	1284	34969	67031	1145	30594	57067	1098	29173	53926	1052	27772	50875	1005	26388	47910

 Figure 4-24 (Sheet 30 of 30)

**SINGLE-ENGINE TAKEOFF FLIGHT PATH - FLAPS 15 °
FIRST AND SECOND SEGMENTS - REFERENCE ZERO TO 1500 FEET
(FIGURE 4-25)**

Knowing weight, altitude, temperature, wind, obstacle height above runway surface and the obstacle distance from "reference zero", determine the available climb gradient for 1500 feet above the airport pressure altitude from Figure 4-32. Using this climb gradient, the required horizontal distance can be determined from Figure 4-25. If this required horizontal distance is less than the available horizontal distance to the obstacle, the takeoff weight determined by other limitations is satisfactory; otherwise, the weight must be reduced to correspond with the required horizontal distance.

EXAMPLE:

Ambient Temperature at Airport = 15 °C
Pressure Altitude at Airport = 2500 FEET
Pressure Altitude at Airport plus 1500 feet = 4000 FEET
Gross Weight at Brake Release = 14,000 POUNDS
Wind = ZERO WIND
Flaps = 15°
Anti-Ice Systems = OFF
A. Obstacle Height = 200 feet above runway surface
B. Obstacle Horizontal Distance from Reference
Zero = 8000 FEET

From Figure 4-32, the available climb gradient under the specified conditions is 7.0 percent.

From Figure 4-25, for 7.0 percent gradient, the required horizontal distance is 2580 feet.

Since the available distance is greater than the required distance, the obstacle will be cleared.

SINGLE ENGINE TAKEOFF FLIGHT PATH TO 1500 FEET - FLAPS 15°**FIRST AND SECOND SEGMENT
REFERENCE ZERO TO 1500 FEET**

CONDITIONS:

Landing Gear - DOWN/UP
 Speed Brakes - RETRACT
 Airspeed - V_2
 Inoperative Engine - WINDMILLING
 Operative Engine - TAKEOFF THRUST

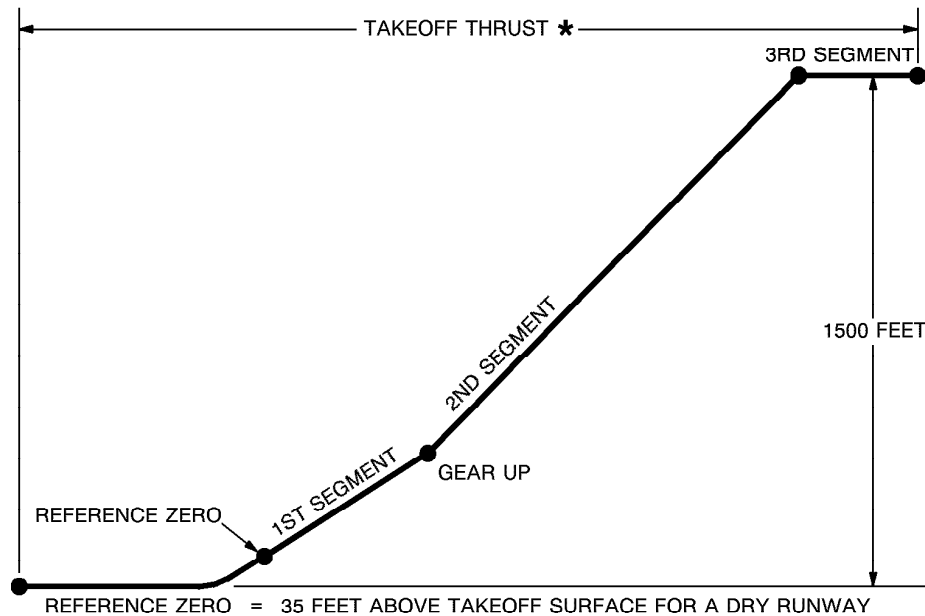
SECOND SEGMENT GRADIENT 1500 FEET ABOVE FIELD ELEVATION - PERCENT													
HEIGHT ABOVE RUNWAY FT	14	13	12	11	10	9	8	7	6	5	4	3	2
	HORIZONTAL DISTANCE FROM REFERENCE ZERO - FEET												
50	120	130	140	160	170	200	220	260	310	390	520	780	1400
100	520	560	620	680	750	850	970	1130	1330	1590	1970	2620	3900
150	920	1000	1090	1200	1320	1460	1640	1860	2170	2590	3220	4280	6400
200	1310	1410	1520	1660	1820	2020	2260	2580	3000	3590	4470	5950	8900
250	1670	1790	1940	2110	2320	2570	2890	3290	3830	4590	5720	7620	11400
300	2030	2180	2360	2570	2820	3130	3510	4010	4670	5590	6970	9280	13900
350	2380	2560	2770	3020	3320	3680	4140	4720	5500	6590	8220	10950	16400
400	2740	2950	3190	3480	3820	4240	4760	5430	6330	7590	9470	12620	18900
450	3100	3330	3610	3930	4320	4790	5390	6150	7170	8590	10720	14280	21400
500	3460	3720	4020	4390	4820	5350	6010	6860	8000	9590	11970	15950	23900
550	3810	4100	4440	4840	5320	5900	6640	7580	8830	10590	13220	17620	26400
600	4170	4490	4860	5290	5820	6460	7260	8290	9670	11590	14470	19280	28900
650	4530	4870	5270	5750	6320	7020	7890	9010	10500	12590	15720	20950	31400
700	4880	5260	5690	6200	6820	7570	8510	9720	11330	13590	16970	22620	33900
750	5240	5640	6110	6660	7320	8130	9140	10430	12170	14590	18220	24280	36400
800	5600	6030	6520	7110	7820	8680	9760	11150	13000	15590	19470	25950	38900
850	5960	6410	6940	7570	8320	9240	10390	11860	13830	16590	20720	27620	41400
900	6310	6790	7360	8020	8820	9790	11010	12580	14670	17590	21970	29280	43900
950	6670	7180	7770	8480	9320	10350	11640	13290	15500	18590	23220	30950	46400
1000	7030	7560	8190	8930	9820	10900	12260	14010	16330	19590	24470	32620	48900
1050	7380	7950	8610	9390	10320	11460	12890	14720	17170	20590	25720	34280	51400
1100	7740	8330	9020	9840	10820	12020	13510	15430	18000	21590	26970	35950	53900
1150	8100	8720	9440	10290	11320	12570	14140	16150	18830	22590	28220	37620	56400
1200	8460	9100	9860	10750	11820	13130	14760	16860	19670	23590	29470	39280	58900
1250	8810	9490	10270	11200	12320	13680	15390	17580	20500	24590	30720	40950	61400
1300	9170	9870	10690	11660	12820	14240	16010	18290	21330	25590	31970	42620	63900
1350	9530	10260	11110	12110	13320	14790	16640	19010	22170	26590	33220	44280	66400
1400	9880	10640	11520	12570	13820	15350	17260	19720	23000	27590	34470	45950	68900
1450	10240	11030	11940	13020	14320	15900	17890	20430	23830	28590	35720	47620	71400
1500	10600	11410	12360	13480	14820	16460	18510	21150	24670	29590	36970	49280	73900



Figure 4-25

SINGLE-ENGINE TAKEOFF FLIGHT PATH DISTANCES - FLAPS 15°

The data presented in Figure 4-27 (anti-ice off) and 4-28 (anti-ice on) is included for the purpose of determining the horizontal distance in the climb from reference zero to 1500 feet and acceleration to V_{ENR} .



* TAKEOFF THRUST IS LIMITED TO TEN MINUTES MAXIMUM AND THEREAFTER TO MAXIMUM CONTINUOUS THRUST.

CONDITIONS

SINGLE-ENGINE FLIGHT PATH CONDITIONS:			
	FIRST SEGMENT	SECOND SEGMENT	THIRD SEGMENT
LANDING GEAR WING FLAP DEGREES SPEED BRAKES INOPERATIVE ENGINE OPERATIVE ENGINE AIRSPEED	DOWN TRANSITION TO UP 15 RETRACT WINDMILLING T.O. THRUST V_2	UP 15 RETRACT WINDMILLING T.O. THRUST V_2	UP 15 TRANSITIONING TO 0 RETRACT WINDMILLING T.O. THRUST V_2 TRANSITIONING TO V_{ENR}


EXAMPLE:

Flaps = 15°
 Ambient Temperature at Airport = 15°C
 Pressure Altitude at Airport = 3000 FEET
 Gross Weight at Brake Release = 15,500 POUNDS
 Wind = 20 KNOTS (HEADWIND)
 Anti-Ice Systems = OFF
 Horizontal Distance from Figure 4-27
 Reference Zero to End of First Segment = 975 FEET
 Reference Zero to End of Second Segment = 24,037 FEET
 Reference Zero to End of Third Segment = 33,241 FEET

Figure 4-26

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15°**
ANTI - ICE SYSTEMS OFF **SEA LEVEL****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**


WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	10	1166	29866	40103	1027	25833	34294	980	24522	32448	934	23228	30646	888	21949	28886
	15	1175	29899	40278	1036	25891	34476	989	24588	32631	943	23302	30831	897	22031	29074
	20	1184	31647	42899	1045	27408	36697	998	26031	34727	952	24673	32806	906	23333	30932
	25	1193	33636	45897	1054	29129	39232	1007	27668	37118	961	26227	35056	914	24804	33045
	30	1201	38144	51946	1062	32980	44319	1016	31312	41906	969	29668	39553	923	28050	37262
	35	1210	44980	60844	1071	38774	51763	1024	36779	48897	978	34820	46110	931	32894	43398
	40	1218	55025	73610	1079	47203	62362	1033	44709	58831	986	42266	55402	940	39876	52075
	45	1227	71158	93485	1087	60535	78665	1041	57188	74049	995	53931	69586	948	50760	65270
	50	1235	100142	127847	1096	83878	106250	1049	78862	99626	1003	74030	93267	956	69373	87162
	52	1238	119006	189104	1099	98664	152465	1052	92476	141575	1006	86554	107669	960	80881	100387
1 6 0 0	53				1101	108201	167877	1054	101211	155548	1008	94548	143934	961	88189	132987
	10	1157	28273	38242	1018	24450	32693	971	23205	30928	925	21977	29207	879	20762	27525
	15	1166	28301	38407	1027	24503	32866	980	23266	31102	934	22045	29382	888	20838	27703
	20	1175	29893	40831	1036	25886	34920	989	24583	33042	943	23297	31209	896	22025	29420
	25	1184	31695	43592	1044	27447	37254	998	26069	35244	952	24708	33282	905	23364	31369
	30	1192	35752	49105	1053	30919	41895	1006	29354	39610	960	27813	37385	914	26294	35217
	35	1201	41822	57111	1061	36075	48601	1015	34225	45914	968	32404	43297	922	30614	40752
	40	1209	50566	68389	1070	43439	57987	1023	41158	54714	977	38922	51535	930	36730	48448
	45	1217	64188	85455	1078	54757	72043	1031	51770	67851	985	48858	63794	939	46017	59866
	50	1225	87429	113566	1086	73663	94797	1040	69379	89003	993	65235	83424	947	61225	78053
1 5 0 0	53	1230	110840	178145	1091	92206	116475	1044	86507	109011	998	81039	101867	952	75787	95028
	54	1232	121714	196583	1092	100652	157899	1046	94262	146443	1000	88153	135627	953	82306	102503
	5	1133	25831	35236	994	22300	30078	948	21149	28437	901	20011	26835	855	18885	25271
	10	1142	25853	35388	1003	22345	30236	956	21201	28596	910	20071	26997	864	18953	25435
	15	1151	25875	35541	1012	22391	30395	965	21255	28758	919	20131	27159	872	19020	25598
	20	1159	27247	37686	1020	23585	32212	974	22393	30473	927	21213	28774	881	20048	27118
	25	1168	28786	40106	1029	24923	34261	982	23665	32404	936	22423	30593	889	21196	28827
	30	1176	32214	44864	1037	27862	38268	991	26451	36178	944	25057	34138	898	23682	32151
	35	1185	37244	51644	1045	32149	43957	999	30502	41525	953	28881	39157	906	27283	36851
	40	1193	44285	60945	1054	38105	51719	1007	36119	48810	961	34168	45981	914	32250	43230
1 5 0 0	45	1201	54795	74475	1062	46903	62921	1015	44386	59295	969	41924	55779	922	39514	52368
	50	1209	71540	95390	1070	60697	80019	1023	57283	75236	977	53964	70615	930	50734	66151
	54	1215	93812	122308	1076	78634	101612	1030	73936	95250	983	69403	89137	937	65027	83263
	5	1122	23614	32555	982	20380	27785	936	19325	26268	890	18281	24787	843	17247	23340
	10	1130	23629	32692	991	20419	27929	945	19371	26414	898	18333	24933	852	17307	23489
	15	1139	23646	32831	1000	20458	28074	953	19416	26559	907	18386	25081	861	17366	23638
	20	1147	24845	34757	1007	21500	29701	961	20409	28094	914	19329	26525	868	18261	24993
	25	1154	26183	36924	1015	22663	31532	968	21515	29819	922	20381	28148	875	19258	26517
	30	1160	29141	41136	1021	25200	35074	975	23918	33151	928	22651	31274	882	21400	29446
	35	1168	33354	46937	1029	28799	39946	983	27323	37732	936	25866	35574	890	24430	33473
1 4 0 0	40	1176	39109	54720	1037	33685	46453	991	31936	43843	944	30213	41301	898	28518	38829
	45	1184	47407	65686	1045	40670	55565	999	38510	52380	952	36391	49286	906	34313	46283
	50	1192	59942	81831	1053	51090	68850	1007	48281	64792	960	45537	60860	914	42858	57054
	54	1199	75417	101228	1059	63745	84602	1013	60084	79444	967	56530	74468	920	53077	69666
	5	1110	21632	30135	971	18663	25716	924	17692	24309	878	16731	22935	831	15778	21594
	10	1119	21644	30260	979	18695	25846	933	17732	24442	886	16776	23068	840	15831	21729
	15	1127	21657	30387	988	18729	25978	941	17771	24574	895	16823	23204	849	15883	21865
	20	1134	22692	32091	995	19632	27420	949	18632	25934	902	17641	24482	856	16661	23067
	25	1142	23843	34003	1002	20633	29033	956	19585	27454	910	18548	25913	863	17521	24409
	30	1146	26413	37760	1006	22833	32183	960	21667	30413	914	20514	28687	867	19373	27003
1 4 0 0	35	1152	30010	42837	1013	25907	36441	966	24574	34415	920	23258	32439	873	21958	30514
	40	1160	34774	49429	1021	29964	41960	974	28406	39597	928	26872	37298	881	25360	35060
	45	1168	41445	58472	1028	35603	49492	982	33723	46662	936	31874	43909	889	30056	41233
	50	1175	51103	71283	1036	43688	60083	990	41319	56569	943	38998	53158	897	36725	49851
	54	1182	62372	85906	1042	53002	72051	996	50035	67728	950	47142	63546	903	44318	59499
	5	1098	19851	27938	959	17116	23834	912	16220	22527	866	15333	21251	820	14454	20006
	10	1107	19860	28053	967	17144	23953	921	16256	22649	874	15374	21374	828	14501	20130
	15	1115	19869	28168	976	17173	24074	929	16290	22770	883	15415	21497	836	14547	20253
	20	1122	20768	29684	983	17959	25357	936	17039	23979	890	16128	22635	844	15225	21322
	25	1129	21763	31378	990	18826	26786	944	17866	25327	897	16914	23902	851	15971	22512
1 4 0 0	30	1133	23965	34664	994	20714	29542	947	19652	27915	901	18602	26328	855	17563	24781
	35	1136	27087	39198	997	23375	33329	950	22166	31468	904	20972	29654	857	19791	27886
	40	1143	31086	44863	1004	26786	38072	957	25390	35923	911	24013	33829	864	22653	31790
	45	1151	36531	52429	1011	31403	44383	965	29747	41843	919	28116	39372	872	26509	36968
	50	1158	44143	62816	1019	37808	52996	973	35774	49907	926	33776	46906	880	31815	43992
	54	1164	52635	74206	1025	44884	62369	979	42412	58661	932	39992	55066	886	37624	51582

 Figure 4-27 (Sheet 1 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

 Figure 4-27 (Sheet 2 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

 Figure 4-27 (Sheet 3 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 15° ANTI - ICE SYSTEMS OFF 1000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	5	1104	17874	25647	965	15445	21923	919	14648	20737	872	13857	19578	826	13073	18448
	10	1113	17914	25860	974	15497	22120	927	14704	20929	881	13918	19766	834	13137	18630
	15	1120	18419	26756	981	15946	22886	935	15135	21654	888	14330	20451	842	13532	19277
	20	1126	19760	28891	987	17106	24685	940	16236	23346	894	15375	22041	847	14520	20766
	25	1131	21411	31493	992	18530	26872	945	17586	25403	899	16653	23971	852	15727	22573
	30	1134	23907	35239	994	20665	30008	948	19608	28349	902	18561	26731	855	17524	25153
	35	1136	27068	39932	997	23361	33929	951	22155	32028	904	20961	30173	858	19782	28368
	40	1143	31100	45760	1004	26799	38805	958	25404	36607	911	24026	34464	865	22667	32380
	45	1151	36520	53451	1012	31397	45220	965	29741	42622	919	28112	40096	873	26507	37641
	50	1159	44037	63936	1019	37722	53910	973	35694	50757	927	33703	47696	880	31747	44724
	52	1162	47956	69317	1022	40997	58346	976	38770	54904	930	36586	51564	883	34443	48323
	5	1092	16456	23845	953	14206	20373	906	13467	19268	860	12734	18189	813	12005	17135
1 3 0 0	10	1100	16489	24039	961	14252	20554	915	13517	19444	868	12787	18360	822	12064	17303
	15	1108	16933	24844	968	14646	21241	922	13895	20094	875	13150	18975	829	12411	17883
	20	1113	18103	26747	974	15660	22844	927	14858	21602	881	14064	20392	834	13274	19208
	25	1118	19534	29050	979	16895	24780	932	16029	23422	886	15173	22099	839	14322	20806
	30	1120	21676	32332	981	18729	27527	935	17766	26002	888	16811	24514	842	15866	23064
	35	1123	24352	36396	984	21014	30921	937	19924	29185	891	18847	27494	844	17780	25845
	40	1125	27810	41556	986	23954	35220	940	22700	33215	893	21460	31262	847	20236	29361
	45	1133	32255	48031	994	27734	40624	947	26268	38284	901	24824	36008	854	23398	33793
	50	1140	38240	56631	1001	32791	47767	955	31034	44975	908	29304	42260	862	27603	39625
	52	1143	41282	60946	1004	35347	51335	958	33438	48312	911	31561	45376	865	29717	42526
	5	1092	15085	21973	953	13033	18806	906	12358	17797	860	11688	16811	814	11023	15850
	10	1100	15115	22152	961	13074	18970	914	12403	17958	868	11736	16967	822	11075	16002
	15	1103	15528	22945	963	13432	19633	917	12744	18580	871	12060	17551	824	11381	16546
1 2 5 0 0	20	1100	16603	24783	961	14349	21157	914	13608	20004	868	12873	18878	821	12144	17780
	25	1105	17848	26830	965	15423	22876	919	14628	21620	873	13839	20394	826	13056	19198
	30	1107	19696	29720	968	17007	25294	921	16126	23889	875	15254	22519	829	14389	21183
	35	1109	21975	33258	970	18955	28249	924	17968	26661	877	16989	25111	831	16021	23602
	40	1111	24884	37708	972	21430	31954	925	20303	30131	879	19190	28357	833	18089	26629
	45	1115	28647	43368	975	24623	36660	929	23316	34541	882	22024	32476	836	20749	30469
	50	1122	33489	50528	983	28727	42614	936	27185	40117	890	25666	37690	843	24168	35330
	52	1125	35898	54053	986	30760	45535	939	29099	42850	893	27465	40243	846	25855	37709
	5	1101	13828	20170	962	11970	17316	915	11358	16406	869	10751	15518	822	10146	14648
	10	1109	13853	20327	970	12006	17461	923	11397	16547	877	10793	15655	831	10193	14784
	15	1112	14206	21021	972	12312	18041	926	11690	17093	879	11070	16165	833	10456	15261
	20	1105	15138	22677	966	13103	19407	919	12434	18367	873	11769	17350	827	11110	16360
1 5 0 0	25	1096	16290	24707	957	14074	21074	910	13345	19919	864	12623	18792	818	11905	17693
	30	1093	17925	27353	954	15465	23271	908	14658	21975	861	13857	20710	815	13064	19478
	35	1095	19878	30452	956	17134	25856	910	16236	24399	863	15345	22977	817	14463	21593
	40	1097	22336	34301	958	19228	29061	911	18212	27400	865	17207	25783	819	16212	24208
	45	1099	25493	39187	959	21906	33116	913	20737	31196	866	19581	29326	820	18439	27507
	50	1103	29518	45332	964	25316	38215	917	23950	35966	871	22604	33781	824	21274	31656
	52	1106	31458	48256	966	26955	40638	920	25497	38237	874	24058	35901	827	22638	33631
	5	1111	12716	18552	971	11028	15977	925	10472	15156	878	9919	14354	832	9369	13569
	10	1119	12738	18691	979	11059	16105	933	10506	15281	887	9957	14476	840	9409	13687
	15	1121	13040	19299	982	11324	16616	935	10758	15760	889	10196	14924	843	9638	14109
	20	1114	13837	20749	975	12001	17812	929	11397	16878	882	10795	15963	836	10198	15071
	25	1105	14810	22511	966	12822	19260	919	12167	18224	873	11518	17216	827	10873	16231
	30	1084	16299	25108	945	14057	21367	899	13322	20180	852	12590	19020	806	11865	17891
1 0 0	35	1081	18013	27924	942	15513	23700	896	14693	22360	849	13880	21054	803	13073	19781
	40	1083	20102	31272	943	17292	26485	897	16373	24968	851	15462	23491	804	14559	22051
	45	1084	22741	35463	945	19534	29963	898	18486	28222	852	17450	26528	805	16424	24879
	50	1085	26101	40759	946	22375	34344	900	21163	32318	853	19964	30346	807	18780	28430
	52	1086	27721	43291	947	23742	36435	900	22448	34270	854	21171	32166	808	19910	30121
	5	1120	11723	17090	981	10185	14766	935	9679	14026	888	9174	13300	842	8672	12591
	10	1129	11742	17212	989	10213	14879	943	9709	14135	897	9207	13407	850	8708	12695
	15	1131	12003	17749	992	10443	15330	945	9928	14558	899	9416	13804	853	8907	13067
	20	1124	12691	19027	985	11027	16384	938	10478	15541	892	9934	14720	846	9392	13917
	25	1114	13519	20565	975	11727	17649	929	11138	16722	882	10550	15815	836	9968	14931
	30	1093	14761	22803	954	12758	19465	908	12100	18405	861	11445	17370	815	10796	16362
	35	1071	16310	25543	932	14040	21684	886	13295	20461	839	12554	19266	793	11820	18103
	40	1068	18127	28561	928	15577	24176	882	14741	22787	836	13913	21434	789	13091	20115
	45	1069	20353	32184	929	17468	27181	883	16525	25598	837	15591	24057	790	14664	22556
	50	1070	23137	36695	930	19825	30912	884	18745	29084	838	17676	27306	791	16618	25576
	52	1070	24465	38836	931	20947	32679	884	19800	30734	838	18666	28842	792	17546	27004



Figure 4-27 (Sheet 4 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT		THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	FT	SECOND FT	THIRD FT	FT	SECOND FT	THIRD FT	FT	SECOND FT	THIRD FT
1 6 3 0 0	0	1185	28354	38440	1046	24608	32971	999	23388	31231	953	22183	29532	907	20992	27873
	5	1195	28963	39548	1055	25157	33928	1009	23919	32142	962	22695	30398	916	21485	28694
	10	1204	29607	40730	1065	25738	34950	1018	24479	33113	972	23235	31319	926	22006	29569
	15	1213	32457	44719	1074	28200	38333	1028	26818	36306	981	25453	34327	935	24106	32398
	20	1222	36582	50487	1083	31827	43205	1037	30256	40898	990	28706	38647	944	27180	36456
	25	1231	42471	58213	1092	36765	49703	1046	34926	47013	999	33117	44393	953	31338	41844
	30	1240	50753	68988	1101	43770	58710	1054	41533	55473	1008	39341	52329	962	37190	49273
	35	1249	62986	84481	1110	53998	71546	1063	51145	67496	1017	48360	63572	970	45639	59766
1 6 0 0	40	1258	82764	108636	1118	70237	91270	1072	66319	85888	1026	62520	80695	979	58834	75686
	45	1266	120616	191600	1127	100337	155258	1081	94165	144425	1034	88254	110678	988	82590	103337
	46				1129	109567	170201	1082	102630	158005	1036	96016	146500	989	89698	135635
	0	1176	26897	36727	1037	23337	31491	990	22176	29824	944	21029	28197	897	19894	26607
	5	1185	27452	37759	1046	23839	32383	1000	22663	30675	953	21498	29004	907	20348	27375
	10	1195	28040	38862	1055	24370	33335	1009	23175	31579	963	21993	29863	916	20825	28190
	15	1204	30632	42537	1065	26612	36453	1018	25305	34521	972	24014	32636	925	22739	30797
	20	1213	34441	47806	1074	29887	40907	1027	28411	38720	981	26955	36587	934	25518	34507
1 5 0 0	25	1222	39600	54787	1082	34296	46784	1036	32584	44253	990	30899	41788	943	29238	39386
	30	1230	46858	64374	1091	40455	54814	1045	38399	51800	998	36379	48868	952	34396	46018
	35	1239	57326	77856	1100	49245	66018	1053	46669	62303	1007	44151	58700	961	41687	55204
	40	1248	73634	98160	1109	62733	82693	1062	59300	77877	1016	55963	73224	969	52714	68724
	45	1256	102872	133090	1117	86302	110773	1071	81197	103931	1024	76279	97363	978	71542	91059
	46	1258	111601	179725	1119	93192	118802	1072	87554	111337	1026	82142	104189	980	76941	97340
	0	1163	24627	34000	1024	21361	29144	977	20294	27597	931	19239	26087	884	18195	24613
	5	1172	25106	34922	1033	21797	29942	986	20716	28357	940	19647	26809	894	18590	25298
1 5 0 0	10	1181	25612	35904	1042	22255	30790	996	21160	29164	949	20076	27575	903	19004	26025
	15	1188	27885	39222	1049	24218	33596	1002	23023	31808	956	21842	30063	909	20674	28360
	20	1197	31113	43787	1057	26998	37455	1011	25661	35446	965	24342	33487	918	23038	31577
	25	1205	35408	49733	1066	30681	42469	1020	29150	40168	973	27640	37926	927	26152	35742
	30	1214	41310	57722	1075	35708	49174	1028	33902	46474	982	32125	43846	936	30378	41290
	35	1223	49535	68609	1083	42656	58257	1037	40452	55000	991	38291	51835	944	36170	48760
	40	1231	61718	84255	1092	52828	71197	1045	50005	67110	999	47249	63151	953	44558	59316
	45	1240	81825	109168	1100	69307	91497	1054	65392	86022	1007	61596	80742	961	57914	75651
1 5 0 0	50	1248	120546	201426	1109	100007	162157	1062	93762	150510	1016	87787	111685	969	82062	104150
	0	1151	22575	31494	1012	19575	26990	965	18594	25556	919	17623	24155	872	16660	22786
	5	1160	22989	32317	1021	19953	27703	974	18961	26235	928	17978	24800	882	17005	23399
	10	1169	23425	33192	1030	20350	28459	984	19346	26954	937	18350	25483	891	17365	24048
	15	1175	25391	36131	1036	22049	30943	989	20957	29292	943	19878	27682	896	18810	26111
	20	1180	28208	40235	1041	24470	34400	995	23253	32547	948	22050	30740	902	20861	28977
	25	1189	31821	45351	1050	27574	38716	1003	26195	36612	957	24835	34563	910	23491	32564
	30	1197	36683	52092	1058	31730	44384	1012	30128	41946	965	28548	39570	919	26993	37258
1 4 5 0 0	35	1206	43271	61047	1067	37321	51875	1020	35405	48981	974	33523	46168	927	31673	43433
	40	1214	52647	73452	1075	45204	62182	1029	42826	58643	982	40495	55207	936	38213	51874
	45	1223	67193	92109	1083	57263	77517	1037	54126	72968	990	51068	68565	944	48089	64309
	50	1231	92370	123200	1091	77668	102603	1045	73109	96262	999	68706	90166	952	64451	84303
	0	1139	20733	29221	1000	17969	25035	953	17064	23702	907	16167	22399	860	15278	21127
	5	1148	21092	29958	1009	18299	25674	962	17384	24310	916	16478	22978	869	15579	21676
	10	1157	21469	30740	1018	18644	26351	971	17718	24953	925	16802	23589	878	15894	22258
	15	1162	23166	33332	1023	20111	28539	977	19113	27016	930	18123	25526	884	17144	24075
1 4 0 0	20	1167	25591	36951	1027	22195	31584	981	21088	29880	935	19993	28217	888	18909	26595
	25	1172	28714	41506	1033	24875	35415	986	23626	33484	940	22392	31601	894	21173	29765
	30	1181	32767	47258	1041	28346	40255	995	26913	38038	948	25498	35877	902	24103	33774
	35	1189	38126	54733	1050	32912	46521	1003	31227	43926	957	29570	41402	910	27936	38945
	40	1197	45509	64785	1058	39153	54901	1011	37111	51788	965	35107	48764	918	33138	45826
	45	1205	56426	79258	1066	48281	66867	1019	45687	62985	973	43151	59224	927	40669	55577
	50	1213	73942	101754	1074	62686	85226	1028	59149	80092	981	55712	75137	935	52370	70353
	0	1127	19069	27146	987	16515	23248	941	15679	22008	895	14850	20797	848	14026	19611
1 4 0 0	5	1136	19382	27810	996	16804	23824	950	15960	22556	904	15122	21316	857	14291	20106
	10	1144	19709	28511	1005	17105	24431	959	16252	23134	912	15406	21866	866	14567	20628
	15	1150	21181	30806	1010	18379	26369	964	17462	24958	918	16554	23581	871	15653	22236
	20	1154	23263	33981	1015	20172	29041	968	19162	27471	922	18162	25940	875	17171	24445
	25	1158	25946	37997	1018	22472	32411	972	21340	30640	925	20219	28911	879	19112	27227
	30	1163	29406	43051	1024	25435	36655	978	24144	34629	931	22868	32654	885	21608	30730
	35	1171	33822	49367	1032	29207	41955	986	27712	39611	939	26237	37329	893	24783	35107
	40	1179	39744	57657	1040	34233	48880	994	32456	46112	947	30707	43420	901	28987	40803
1 4 0 0	45	1187	48171	69186	1048	41324	58451	1002	39130	55078	955	36978	51803	909	34868	48625
	50	1195	60943	86208	1056	51936	72444	1010	49079	68145	963	46289	63983	917	43566	59955

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS OFF

FLAPS - 15°

2000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	0	1114	17557	25242	975	15195	21610	929	14420	20454	882	13650	19323	836	12887	18220
3	5	1123	17831	25840	984	15448	22129	937	14666	20947	891	13891	19794	845	13121	18667
5	10	1132	18117	26473	993	15713	22677	946	14923	21468	900	14141	20289	853	13363	19136
0	15	1137	19399	28514	998	16823	24399	951	15978	23089	905	15141	21812	858	14310	20564
0	20	1141	21197	31313	1002	18372	26754	955	17447	25304	909	16532	23891	862	15623	22510
0	25	1144	23487	34818	1005	20338	29695	959	19310	28069	912	18291	26483	866	17283	24936
	30	1147	26455	39278	1008	22875	33429	962	21709	31575	915	20555	29767	869	19415	28007
	35	1154	30171	44743	1014	26050	38009	968	24712	35878	922	23391	33803	875	22085	31781
	40	1162	34992	51676	1022	30155	43809	976	28590	41324	929	27047	38906	883	25527	36554
	45	1169	41640	61051	1030	35776	51612	984	33888	48639	937	32032	45750	891	30208	42945
	50	1177	51280	74356	1038	43846	62602	991	41470	58916	945	39144	55343	899	36866	51881
1	0	1102	16179	23487	963	13989	20099	916	13269	19020	870	12555	17966	823	11846	16937
3	5	1111	16419	24028	971	14212	20568	925	13487	19467	878	12767	18391	832	12053	17341
0	10	1119	16669	24599	980	14444	21063	933	13713	19937	887	12987	18838	841	12267	17765
0	15	1124	17790	26420	985	15416	22599	938	14636	21382	892	13863	20195	846	13096	19038
0	20	1128	19350	28900	989	16761	24684	942	15911	23342	896	15070	22034	849	14235	20758
0	25	1131	21317	31976	992	18451	27264	945	17512	25767	899	16583	24308	853	15663	22885
	30	1134	23834	35845	995	20605	30503	948	19550	28808	902	18506	27156	855	17473	25546
	35	1136	27013	40670	997	23315	34531	951	22111	32588	904	20920	30693	858	19744	28849
	40	1143	31005	46572	1004	26719	39468	958	25329	37223	911	23955	35036	865	22601	32910
	45	1151	36343	54323	1012	31248	45929	965	29601	43281	919	27980	40708	872	26383	38206
	50	1159	43813	64981	1019	37536	54761	973	35520	51548	926	33539	48429	880	31595	45403
1	0	1107	14817	21579	968	12831	18512	922	12178	17535	875	11528	16579	829	10884	15647
2	5	1116	15029	22065	976	13027	18932	930	12369	17935	883	11715	16959	837	11066	16008
5	10	1124	15249	22577	984	13231	19375	938	12568	18356	892	11910	17361	845	11254	16387
0	15	1114	16309	24442	975	14125	20906	928	13407	19782	882	12695	18684	835	11987	17612
0	20	1115	17689	26704	975	15308	22796	929	14528	21556	882	13752	20343	836	12984	19162
0	25	1118	19387	29416	978	16768	25071	932	15910	23692	885	15059	22346	839	14216	21034
	30	1120	21534	32792	981	18608	27897	934	17650	26344	888	16702	24830	842	15763	23355
	35	1122	24207	36949	983	20890	31368	937	19808	29600	890	18736	27877	844	17676	26199
	40	1125	27613	42156	985	23785	35704	939	22539	33662	893	21309	31675	846	20093	29741
	45	1132	31959	48648	993	27482	41120	946	26030	38742	900	24599	36431	854	23187	34183
	50	1140	37869	57352	1000	32477	48346	954	30738	45511	908	29026	42756	861	27341	40080
1	0	1116	13600	19824	977	11799	17058	931	11207	16177	884	10617	15314	838	10031	14471
2	5	1125	13785	20254	985	11972	17431	939	11375	16531	893	10783	15653	846	10192	14792
0	10	1133	13977	20707	994	12152	17825	947	11550	16905	901	10953	16008	854	10359	15130
0	15	1123	14873	22327	984	12908	19156	937	12260	18145	891	11618	17159	844	10979	16196
0	20	1108	16142	24570	968	13969	20987	922	13255	19848	876	12547	18738	829	11843	17653
0	25	1104	17658	27093	965	15260	23082	918	14472	21807	872	13692	20566	825	12917	19354
	30	1106	19500	30054	967	16838	25558	920	15966	24132	874	15102	22742	828	14245	21386
	35	1108	21765	33661	969	18773	28568	923	17795	26955	876	16826	25382	830	15867	23850
	40	1110	24605	38118	971	21191	32280	924	20077	30431	878	18976	28632	832	17886	26880
	45	1113	28271	43785	974	24302	36989	927	23011	34841	881	21736	32752	834	20477	30719
	50	1120	33024	51002	981	28331	42987	935	26812	40461	888	25313	38004	842	23836	35617
1	0	1126	12521	18245	987	10883	15749	940	10343	14952	894	9806	14173	848	9273	13413
1	5	1135	12684	18627	995	11036	16080	949	10493	15268	902	9953	14474	856	9416	13698
5	10	1143	12853	19029	1004	11195	16430	957	10648	15601	911	10105	14791	864	9564	13999
0	15	1133	13617	20447	993	11839	17595	947	11255	16688	900	10672	15799	854	10094	14932
0	20	1117	14684	22392	978	12734	19485	931	12092	18165	885	11455	17169	838	10821	16197
0	25	1099	16045	24817	959	13867	21160	913	13153	20000	866	12442	18866	820	11738	17762
	30	1092	17689	27584	953	15261	23448	906	14463	22135	860	13673	20855	813	12888	19607
	35	1094	19620	30731	954	16909	26071	908	16023	24595	862	15144	23157	815	14271	21754
	40	1095	22005	34571	956	18943	29268	910	17942	27589	863	16951	25954	817	15970	24363
	45	1097	25054	39424	958	21530	33296	911	20381	31358	865	19245	29472	818	18121	27637
	50	1100	28999	45623	961	24869	38432	915	23528	36163	868	22204	33957	822	20897	31813
1	0	1136	11554	16815	997	10061	14562	951	9569	13843	904	9078	13139	858	8590	12450
1	5	1145	11700	17156	1006	10198	14858	959	9702	14124	913	9210	13408	866	8719	12706
0	10	1153	11849	17512	1014	10339	15168	968	9842	14422	921	9345	13689	875	8852	12974
0	15	1143	12506	18762	1003	10893	16194	957	10362	15377	910	9833	14577	864	9308	13797
0	20	1126	13411	20459	987	11653	17584	941	11074	16668	894	10498	15774	848	9926	14901
0	25	1108	14550	22556	968	12602	19291	922	11962	18254	875	11325	17241	829	10693	16254
	30	1086	16006	25175	947	13811	21419	901	13091	20228	854	12374	19064	808	11664	17932
	35	1079	17720	28104	939	15256	23830	893	14449	22476	846	13647	21155	800	12853	19870
	40	1080	19738	31434	941	16977	26601	894	16073	25070	848	15177	23579	801	14288	22127
	45	1081	22276	35586	942	19133	30045	895	18105	28292	849	17089	26587	803	16083	24928
	50	1082	25538	40882	943	21892	34424	897	20705	32386	850	19530	30402	804	18370	28475



Figure 4-27 (Sheet 6 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15°**
ANTI - ICE SYSTEMS OFF **3000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 0 0	0	1204	28480	39170	1065	24776	33644	1019	23570	31886	972	22376	30168	926	21198	28493
	5	1214	29857	41262	1075	25983	35434	1028	24722	33581	982	23477	31773	935	22246	30007
	10	1223	31776	44080	1084	27654	37836	1038	26315	35854	991	24991	33917	945	23686	32031
	15	1233	36046	49899	1094	31327	42761	1047	29797	40497	1001	28291	38292	954	26804	36141
	20	1242	41650	57431	1103	36119	49109	1056	34335	46477	1010	32579	43914	963	30851	41418
	25	1251	49370	67558	1112	42670	57599	1065	40521	54460	1019	38413	51409	973	36344	48443
	30	1260	60624	81959	1121	52118	69574	1074	49412	65690	1028	46768	61924	982	44183	58272
	35	1269	77923	103377	1130	66413	87161	1083	62797	82119	1037	59284	77247	991	55871	72543
	40	1278	108692	170579	1139	91171	116490	1092	85787	109326	1046	80611	102457	999	75629	95867
	43	1280	118033	185957	1141	98524	151436	1094	92568	117161	1048	86860	109675	1001	81382	102509
1 5 0 0	0	1195	27015	37424	1056	23495	32133	1009	22347	30449	963	21212	28804	916	20089	27198
	5	1205	28272	39364	1065	24597	33792	1019	23401	32021	972	22218	30291	926	21049	28604
	10	1214	30016	41963	1075	26120	36010	1028	24851	34118	982	23599	32273	935	22361	30471
	15	1223	33872	47287	1084	29441	40518	1038	28004	38371	991	26585	36277	945	25186	34236
	20	1232	38873	54102	1093	33726	46268	1047	32063	43789	1000	30424	41372	954	28811	39020
	25	1241	45656	63136	1102	39498	53854	1056	37518	50925	1009	35572	48075	963	33661	45304
	30	1250	55323	75718	1111	47647	64346	1065	45197	60773	1018	42797	57303	972	40448	53937
	35	1259	69702	93867	1120	59606	79322	1074	56417	74784	1027	53309	70390	981	50282	66141
	40	1268	93913	123261	1129	79314	103156	1082	74782	96958	1036	70404	90994	989	66171	85255
	43	1273	118658	190766	1134	98918	154925	1088	92898	118144	1041	87129	110542	995	81596	103269
1 5 0 0	0	1190	25831	36390	1051	22468	31228	1005	21371	29586	958	20284	27981	912	19211	26417
	5	1198	27362	38744	1059	23801	33228	1012	22640	31475	966	21492	29764	919	20356	28093
	10	1207	30638	43363	1068	26628	37142	1021	25324	35167	975	24037	33241	928	22764	31362
	15	1216	34810	49182	1077	30213	42057	1030	28722	39798	984	27253	37599	937	25804	35455
	20	1225	40343	56735	1086	34940	48414	1039	33195	45782	993	31479	43222	946	29789	40729
	25	1234	47981	66953	1094	41413	56963	1048	39306	53816	1002	37238	50758	955	35207	47784
	30	1242	58837	81088	1103	50520	68700	1057	47873	64817	1010	45285	61051	964	42754	57400
	35	1251	75867	102522	1112	64582	86278	1065	61035	81228	1019	57587	76348	973	54236	71636
	40	1260	106726	176243	1120	89386	116113	1074	84057	108888	1028	78932	101960	981	73998	95314
	43	1261	116172	192992	1122	96810	156299	1076	90900	116909	1029	85233	109343	983	79795	102102
1 5 0 0	0	1170	22667	32081	1031	19702	27531	984	18732	26082	938	17772	24667	891	16820	23285
	5	1178	23617	33631	1039	20538	28856	992	19531	27335	946	18535	25852	900	17549	24403
	10	1185	24931	35702	1046	21684	30615	1000	20624	28998	953	19575	27419	907	18536	25878
	15	1190	27808	39888	1051	24160	34146	1005	22972	32323	958	21796	30543	912	20635	28809
	20	1199	31321	44900	1060	27185	38383	1014	25842	36317	967	24515	34302	921	23205	32339
	25	1208	35893	51294	1069	31103	43772	1022	29551	41390	976	28023	39071	930	26516	36813
	30	1217	42038	59737	1077	36333	50853	1031	34496	48050	985	32688	45322	938	30910	42668
	35	1225	50461	71037	1086	43446	60277	1040	41200	56893	993	38997	53606	947	36837	50415
	40	1234	62984	87349	1095	53891	73753	1048	51007	69503	1002	48192	65386	955	45443	61399
	43	1242	83751	113424	1103	70888	94973	1057	66871	89264	1010	62977	83759	964	59203	78455
1 4 0 0	0	1158	20815	29763	1018	18084	25534	972	17190	24188	926	16304	22873	879	15425	21588
	5	1166	21639	31140	1026	18810	26711	980	17884	25301	934	16967	23925	887	16058	22581
	10	1173	22773	32969	1034	19801	28265	987	18829	26770	941	17866	25309	894	16912	23883
	15	1177	25243	36647	1038	21929	31366	992	20847	29688	945	19776	28050	899	18717	26454
	20	1182	28294	41137	1043	24550	35147	997	23332	33248	950	22126	31393	904	20936	29588
	25	1191	32112	46604	1052	27830	39759	1005	26439	37590	959	25067	35477	912	23712	33418
	30	1199	37128	53678	1060	32114	45702	1014	30494	43182	967	28896	40727	921	27323	38339
	35	1208	43806	62899	1069	37780	53413	1022	35841	50423	976	33937	47517	929	32064	44691
	40	1216	53321	75706	1077	45777	64048	1031	43368	60390	984	41008	56840	938	38697	53397
	43	1225	68114	95004	1085	58034	79898	1039	54852	75192	992	51750	70639	946	48729	66238
1 4 0 0	0	1145	19143	27648	1006	16621	23711	959	15793	22457	913	14974	21233	867	14161	20038
	5	1153	19860	28876	1014	17254	24760	967	16399	23449	921	15553	22171	875	14714	20922
	10	1160	20842	30498	1021	18114	26139	974	17220	24752	928	16334	23398	882	15457	22078
	15	1164	22968	33729	1025	19946	28862	979	18959	27316	932	17980	25806	886	17012	24334
	20	1168	25579	37669	1029	22190	32176	983	21086	30434	936	19991	28732	890	18910	27075
	25	1174	28860	42513	1034	25003	36248	988	23749	34263	941	22509	32328	895	21285	30443
	30	1182	33005	48509	1043	28555	41293	996	27111	39009	950	25688	36786	903	24282	34620
	35	1190	38389	56155	1051	33141	47699	1005	31446	45030	958	29776	42431	912	28133	39906
	40	1198	45805	66454	1059	39408	56280	1013	37355	53080	966	35337	49969	920	33358	46950
	43	1207	56778	81296	1067	48581	68545	1021	45972	64554	974	43420	60685	928	40924	56937
1 4 0 0	0	1211	66312	93859	1072	56458	78832	1026	53343	74149	979	50307	69619	933	47349	65242
	5															
	10															
	15															
	20															
	25															
	30															
	35															
	40															
	43															



Figure 4-27 (Sheet 7 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE



U.S. 4-167

**SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 15°
ANTI - ICE SYSTEMS OFF 4000 FEET****CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 3 0 0	-5	1214	28642	39647	1075	24944	34076	1028	23739	32303	982	22549	30573	936	21373	28884
	0	1224	30242	42026	1085	26344	36111	1038	25075	34230	992	23823	32396	946	22585	30605
	5	1234	32271	44966	1095	28111	38622	1048	26759	36606	1002	25425	34641	955	24107	32722
	10	1243	35730	49762	1104	31097	42693	1058	29596	40452	1011	28115	38266	965	26655	36135
	15	1253	41097	56998	1114	35698	48806	1067	33954	46213	1021	32239	43689	974	30550	41230
	20	1262	48338	66581	1123	41860	56860	1077	39780	53793	1030	37737	50810	984	35732	47911
	25	1272	58607	79854	1132	50512	67931	1086	47933	64188	1039	45409	60555	993	42941	57032
	30	1281	74339	99577	1141	63581	84201	1095	60191	79409	1049	56993	74775	1002	53682	70294
	35	1290	100517	131111	1151	84835	109726	1104	79984	103148	1058	75306	96827	1011	70790	90749
	37	1294	117039	183607	1154	97938	125023	1108	92100	117288	1061	86498	109881	1015	81120	102789
1 6 3 0 0	39				1158	115839	178567	1111	108542	165974	1065	101593	154089	1019	94968	142863
	0	1215	28624	40078	1075	24929	34426	1029	23727	32631	982	22537	30876	936	21361	29164
	5	1224	30467	42789	1085	26538	36743	1039	25260	34822	992	23996	32946	946	22749	31118
	10	1234	33591	47179	1094	29238	40471	1048	27826	38344	1002	26432	36268	955	25056	34244
	15	1243	38386	53734	1104	33356	46014	1057	31729	43569	1011	30127	41188	965	28548	38868
	20	1252	44758	62297	1113	38793	53222	1067	36874	50356	1020	34986	47567	974	33131	44854
	25	1262	53610	73935	1122	46281	62955	1076	43938	59502	1029	41641	56147	983	39390	52889
	30	1271	66764	90748	1131	57273	76886	1085	54267	72552	1039	51335	68355	992	48474	64290
	35	1280	87643	116467	1140	74396	97877	1094	70264	91215	1048	66261	86579	1001	62381	81232
	39	1287	116973	187103	1148	97797	152580	1101	91397	117177	1055	86316	110242	1008	80919	103085
1 5 5 0 0	40	1289	127665	205041	1149	106142	166252	1103	99615	154705	1057	93376	143777	1010	87404	110572
	42													1014	104086	160159
	0	1201	26123	37005	1061	22746	31777	1015	21645	30115	969	20556	28492	922	19477	26906
	5	1208	27752	39481	1069	24164	33883	1022	22994	32103	976	21838	30367	929	20695	28673
	10	1217	30404	43292	1078	26462	37123	1032	25180	35165	985	23913	33253	939	22662	31390
	15	1227	34412	48899	1087	29912	41867	1041	28454	39640	994	27014	37467	948	25595	35351
	20	1236	39620	56076	1096	34373	47921	1050	32679	45343	1004	31010	42831	957	29367	40386
	25	1245	46646	65572	1106	40349	55891	1059	38325	52838	1013	36338	49869	966	34385	46983
	30	1254	56659	78777	1114	48781	66891	1068	46269	63160	1022	43810	59540	975	41402	56027
	35	1263	71599	97850	1123	61190	82611	1077	57907	77862	1031	54710	73268	984	51595	68824
1 5 5 0 0	40	1271	97301	129335	1132	82061	108089	1086	77341	101551	1039	72786	95264	993	68387	89220
	42	1275	113647	187879	1136	95029	123463	1089	89329	115756	1043	83859	108378	996	78602	101308
	45										1048	108632	174520	1002	101270	161102
	0	1188	23869	34183	1049	20781	29349	1003	19772	27812	956	18772	26309	910	17783	24844
	5	1195	25265	36354	1056	21998	31197	1010	20931	29557	963	19875	27956	917	18830	26393
	10	1201	27607	39836	1062	24019	34140	1015	22850	32331	969	21694	30566	922	20550	28844
	15	1210	30992	44684	1071	26940	38245	1024	25622	36202	978	24322	34212	931	23037	32271
	20	1219	35303	50771	1079	30642	43386	1033	29133	41048	987	27644	38770	940	26175	36550
	25	1228	40978	58650	1088	35488	50013	1042	33717	47284	996	31975	44629	949	30260	42046
	30	1236	48793	69272	1097	42110	58896	1051	39967	55630	1004	37863	52455	958	35800	49373
1 4 5 0 0	35	1245	59919	83967	1106	51437	71089	1060	48739	67055	1013	46102	63145	967	43524	59355
	40	1254	77654	106574	1115	66062	89607	1068	62423	84337	1022	58888	79249	975	55452	74335
	45	1263	110390	189069	1123	92305	121483	1077	86761	113869	1030	81435	106575	984	76315	99586
	46	1264	120579	208216	1125	100281	167943	1079	94104	155986	1032	88189	144686	986	82521	106906
	0	1176	21858	31636	1037	19024	27157	990	18095	25730	944	17176	24338	897	16264	22977
	5	1183	23062	33553	1044	20074	28787	997	19097	27271	951	18130	25791	904	17170	24345
	10	1188	25063	36595	1049	21805	31360	1002	20740	29695	956	19688	28072	910	18646	26488
	15	1193	28020	40971	1053	24347	35047	1007	23152	33168	961	21970	31335	914	20800	29547
	20	1201	31624	46185	1062	27451	39455	1016	26096	37322	969	24757	35243	923	23436	33218
	25	1210	36271	52809	1071	31432	45034	1025	29867	42576	978	28322	40180	932	26801	37850
1 4 5 0 0	30	1219	42496	61519	1080	36731	52338	1033	34873	49440	987	33048	46625	940	31251	43885
	35	1228	51036	73171	1088	43938	62048	1042	41667	58553	995	39439	55158	949	37256	51864
	40	1236	63891	90185	1097	54656	76097	1050	51728	71694	1004	48871	67433	958	46083	63308
	45	1245	85462	117640	1105	72288	98413	1059	68179	92469	1012	64198	86742	966	60342	81226
	46	1246	91661	125315	1107	77277	104572	1061	72811	98180	1014	68493	92030	968	64319	86114
	0	1163	20052	29325	1024	17442	25164	977	16586	23838	931	15738	22545	885	14897	21282
	5	1170	21095	31024	1031	18354	26609	984	17455	25203	938	16566	23832	891	15684	22494
	10	1175	22816	33698	1036	19844	28870	989	18871	27334	943	17909	25837	897	16956	24377
	15	1179	25338	37520	1040	22015	32090	993	20930	30365	947	19857	28684	900	18795	27044
	20	1184	28452	42174	1045	24690	36008	998	23465	34053	952	22255	32148	905	21057	30289
1 4 5 0 0	25	1192	32302	47805	1053	27997	40756	1007	26600	38525	960	25220	36350	914	23859	34233
	30	1201	37341	55057	1062	32301	46847	1015	30671	44253	969	29066	41728	922	27484	39272
	35	1209	44049	64501	1070	37993	54741	1024	36045	51667	977	34130	48678	931	32249	45776
	40	1218	53711	77752	1079	46112	65740	1032	43684	61971	986	41309	58317	939	38981	54773
	45	1226	68845	97838	1087	58646	82228	1040	55426	77365	994	52291	72666	948	49237	68124
	46	1228	72963	103177	1089	62020	86573	1042	58575	81410	996	55227	76427	949	51968	71613



Figure 4-27 (Sheet 9 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS OFF

FLAPS - 15°

4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	0	1150	18419	27212	1011	16011	23342	965	15221	22110	918	14436	20906	872	13658	19731
	5	1157	19327	28724	1018	16805	24627	971	15978	23324	925	15158	22051	878	14344	20808
	10	1162	20815	31087	1023	18095	26625	976	17203	25205	930	16321	23822	883	15445	22470
	15	1166	22973	34431	1026	19954	29440	980	18967	27856	933	17990	26310	887	17022	24803
	20	1169	25624	38500	1030	22232	32863	983	21125	31074	937	20031	29331	891	18948	27632
	25	1174	28909	43460	1035	25049	37032	989	23794	34996	942	22552	33011	896	21327	31079
	30	1183	33042	49574	1043	28589	42172	997	27145	39831	951	25721	37553	904	24315	35334
	35	1191	38411	57363	1052	33163	48696	1005	31468	45961	959	29799	43301	913	28157	40716
	40	1199	45874	67952	1060	39471	57516	1014	37416	54234	967	35396	51045	921	33415	47952
	45	1207	56971	83271	1068	48748	70170	1022	46131	66071	975	43571	62100	929	41067	58252
1 3 5 0 0	46	1209	59873	87198	1070	51154	73394	1023	48384	69079	977	45679	64903	931	43037	60861
	0	1137	16937	25273	998	14710	21669	952	13979	20522	905	13252	19401	859	12531	18307
	5	1144	17730	26624	1004	15404	22816	958	14641	21605	912	13884	20423	865	13131	19268
	10	1148	19022	28719	1009	16525	24587	963	15706	23273	916	14894	21991	870	14088	20740
	15	1152	20878	31659	1013	18126	27062	966	17224	25601	920	16332	24178	873	15446	22788
	20	1155	23132	35201	1016	20064	30040	970	19062	28403	923	18068	26804	877	17086	25249
	25	1158	25922	39539	1019	22456	33679	973	21326	31823	926	20207	30012	880	19101	28248
	30	1164	29401	44851	1025	25434	38136	978	24144	36011	932	22870	33941	886	21612	31927
	35	1172	33764	51367	1033	29162	43600	987	27671	41147	940	26199	38758	894	24749	36435
	40	1180	39654	60000	1041	34162	50806	995	32391	47909	948	30648	45093	902	28933	42358
1 2 5 0 0	45	1188	48062	72046	1049	41239	60798	1003	39054	57268	956	36909	53841	910	34806	50519
	46	1190	50194	75049	1051	43023	63278	1004	40728	59585	958	38480	56005	911	36275	52533
	0	1141	15487	23195	1001	13466	19926	955	12802	18885	909	12143	17870	862	11487	16876
	5	1137	16237	24574	997	14105	21068	951	13405	19954	905	12710	18866	858	12019	17802
	10	1135	17406	26559	996	15109	22728	949	14354	21510	903	13605	20320	856	12862	19160
	15	1138	19010	29155	999	16493	24913	952	15667	23564	906	14848	22249	860	14037	20968
	20	1141	20937	32255	1002	18151	27517	956	17239	26013	909	16335	24546	863	15439	23116
	25	1144	23293	36009	1005	20172	30665	959	19153	28972	912	18143	27320	866	17144	25711
	30	1147	26238	40652	1008	22690	34550	961	21533	32617	915	20391	30737	869	19260	28904
	35	1153	29867	46246	1014	25792	39234	967	24467	37017	921	23160	34860	875	21869	32761
1 2 5 0 0	40	1161	34596	53397	1022	29820	45212	975	28274	42629	929	26750	40118	882	25247	37676
	45	1169	41130	63092	1030	35347	53275	983	33484	50185	937	31654	47187	890	29852	44273
	46	1170	42746	65457	1031	36707	55234	985	34765	52021	938	32856	48900	892	30981	45872
	0	1150	14180	21246	1011	12355	18306	964	11753	17368	918	11156	16454	872	10562	15559
	5	1146	14814	22446	1007	12895	19300	960	12264	18299	914	11637	17322	867	11013	16366
	10	1133	15865	24355	994	13780	20869	948	13095	19761	901	12413	18678	855	11738	17623
	15	1124	17333	26879	985	15025	22957	939	14267	21711	892	13514	20495	846	12768	19310
	20	1127	18990	29605	988	16451	25246	941	15618	23861	895	14793	22512	849	13974	21197
	25	1130	20992	32874	991	18170	27987	944	17245	26435	898	16331	24926	851	15423	23453
	30	1132	23458	36866	993	20281	31326	947	19243	29571	900	18216	27862	854	17199	26197
1 5 0 0	35	1135	26520	41747	996	22893	35400	949	21711	33392	903	20543	31437	856	19388	29535
	40	1141	30402	47810	1002	26203	40464	956	24840	38145	909	23493	35888	863	22165	33694
	45	1149	35580	55755	1010	30599	47082	963	28988	44349	917	27402	41694	870	25838	39114
	46	1150	36836	57661	1011	31661	48665	965	29990	45832	918	28343	43079	872	26722	40406
	0	1160	13028	19500	1021	11372	16852	975	10826	16008	928	10282	15182	882	9743	14376
	5	1156	13568	20551	1017	11833	17723	970	11261	16822	924	10694	15943	877	10128	15083
	10	1143	14452	22209	1004	12579	19087	957	11961	18092	911	11349	17123	864	10739	16175
	15	1124	15738	24555	984	13652	21002	938	12967	19874	891	12286	18773	845	11611	17700
	20	1113	17251	27206	973	14929	23187	927	14167	21912	880	13411	20669	834	12661	19457
	25	1115	18961	30067	976	16399	25586	929	15558	24163	883	14726	22779	836	13899	21428
1 5 0 0	30	1117	21042	33524	978	18182	28477	932	17246	26878	885	16318	25319	839	15400	23803
	35	1120	23591	37700	980	20357	31960	934	19303	30145	888	18259	28378	841	17224	26656
	40	1122	26848	42970	983	23129	36347	936	21918	34254	890	20722	32219	843	19538	30238
	45	1128	31040	49622	989	26694	41887	943	25284	39447	896	23893	37076	850	22520	34771
	46	1130	32036	51185	991	27539	43186	944	26081	40665	898	24643	38214	851	23224	35832
	0	1171	12002	17925	1032	10495	15539	985	9997	14777	939	9503	14033	892	9010	13305
	5	1166	12465	18850	1027	10891	16306	981	10373	15496	934	9856	14703	888	9343	13929
	10	1153	13216	20301	1014	11525	17500	967	10967	16607	921	10413	15735	874	9861	14883
	15	1133	14293	22332	994	12425	19160	947	11809	18150	901	11199	17166	855	10592	16205
	20	1113	15599	24756	974	13513	21135	927	12827	19985	881	12147	18865	834	11470	17771
1 5 0 0	25	1100	17158	27542	960	14822	23422	914	14056	22116	867	13295	20843	821	12541	19603
	30	1102	18926	30554	962	16337	25940	916	15490	24479	870	14649	23055	823	13815	21668
	35	1104	21064	34153	964	18165	28942	918	17217	27293	872	16279	25689	825	15347	24124
	40	1106	23753	38634	966	20455	32670	920	19380	30786	874	18315	28952	827	17261	27167
	45	1107	27254	44397	968	23424	37450	922	22178	35258	875	20947	33126	829	19730	31054
	46	1108	28066	45717	969	24113	38546	923	22828	36284	876	21558	34084	830	20304	31947



Figure 4-27 (Sheet 10 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15°**
ANTI - ICE SYSTEMS OFF **5000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-10	1224	29121	40514	1085	25384	34838	1038	24167	33033	992	22964	31270	945	21775	29550
	-5	1234	30901	43146	1095	26940	37090	1048	25651	35165	1002	24379	33287	956	23122	31455
	0	1244	33235	46471	1105	28970	39929	1058	27584	37851	1012	26218	35826	966	24869	33850
	5	1254	35958	50324	1115	31330	43212	1068	29830	40956	1022	28351	38757	976	26893	36613
	10	1264	41004	57170	1125	35664	49007	1078	33939	46423	1032	32242	43906	985	30570	41455
	15	1273	47755	66165	1134	41424	56585	1088	39389	53561	1041	37391	50619	995	35428	47758
	20	1283	57230	78532	1144	49434	66930	1097	46945	63283	1051	44509	59743	1004	42124	56306
	25	1292	71444	96572	1153	61294	81868	1107	58087	77277	1060	54963	72833	1014	51918	68532
	30	1302	94675	124962	1163	80289	104993	1116	75817	98827	1070	71495	92892	1023	67313	87176
	33	1307	117347	184316	1168	98371	126298	1122	92567	118554	1075	86996	111137	1029	81647	104033
1 6 3 0 0	35	1172	115767	178414	1172	115767	178414	1125	108561	166009	1079	101695	154288	1033	95144	143204
	-15	1205	26191	36541	1066	22817	31419	1019	21715	29787	973	20626	28194	926	19548	26639
	-10	1214	27596	38679	1075	24049	33249	1029	22893	31521	982	21749	29834	936	20618	28187
	-5	1224	29220	41115	1085	25471	35334	1039	24250	33496	992	23043	31702	946	21851	29952
	0	1234	31341	44177	1095	27318	37950	1049	26010	35972	1002	24718	34042	956	23442	32160
	5	1244	33799	47706	1105	29452	40958	1059	28042	38818	1012	26649	36729	966	25275	34693
	10	1254	38307	53909	1115	33331	46214	1068	31721	43776	1022	30136	41402	975	28573	39088
	15	1263	44252	61954	1124	38417	53002	1078	36538	50174	1031	34689	47420	985	32872	44742
	20	1273	52438	72825	1134	45362	62116	1087	43096	58745	1041	40875	55470	994	38697	52288
	25	1282	64378	88278	1143	55381	74966	1097	52525	70798	1050	49736	66757	1004	47012	62842
1 5 5 0 0	30	1292	83083	111656	1152	70814	94146	1106	66971	88712	1060	63243	83468	1013	59622	78404
	35	1301	116685	186642	1162	97763	126294	1115	91974	118517	1069	86419	111071	1022	81083	103937
	-5	1210	26649	37957	1070	23223	32606	1024	22106	30905	978	21001	29244	931	19907	27623
	0	1218	28497	40702	1079	24832	34946	1032	23638	33117	986	22458	31333	940	21291	29591
	5	1228	30584	43769	1088	26648	37563	1042	25369	35594	996	24105	33672	949	22855	31797
	10	1237	34350	49074	1098	29899	42065	1052	28455	39842	1005	27030	37675	959	25625	35564
	15	1247	39216	55828	1107	34075	47772	1061	32414	45223	1015	30778	42741	968	29166	40324
	20	1256	45733	64730	1117	39634	55260	1070	37671	52271	1024	35744	49366	977	33848	46538
	25	1265	54878	76946	1126	47364	65469	1080	44963	61862	1033	42611	58360	987	40307	54961
	30	1274	68423	94493	1135	58669	79992	1089	55584	75464	1042	52574	71078	996	49641	66835
1 5 5 0 0	35	1283	90600	122108	1144	76819	102491	1098	72528	96429	1051	68375	90590	1005	64355	84966
	39	1291	122428	203025	1151	102107	164883	1105	95921	153505	1059	89997	116312	1012	84317	108695
	40	1292	134233	223686	1153	111267	180506	1107	104332	167720	1060	97716	155651	1014	91398	144251
	0	1204	25926	37477	1065	22588	32169	1019	21500	30483	972	20421	28835	926	19355	27228
	5	1211	27766	40273	1072	24186	34545	1025	23018	32725	979	21865	30950	933	20724	29218
	10	1220	30945	44858	1081	26935	38437	1035	25631	36399	988	24342	34411	942	23070	32475
	15	1230	34976	50595	1090	30404	43289	1044	28922	40976	997	27460	38721	951	26019	36526
	20	1239	40251	58000	1099	34920	49531	1053	33200	46856	1007	31506	44251	960	29838	41716
	25	1248	47425	67879	1109	41020	57818	1062	38962	54647	1016	36942	51565	969	34958	48570
	30	1257	57601	81521	1118	49586	69176	1071	47030	65302	1025	44531	61547	978	42083	57903
1 4 0 0	35	1266	73195	101718	1126	62523	85805	1080	59160	80849	1034	55888	76059	987	52701	71428
	40	1275	100432	135456	1135	84590	113054	1089	79695	106171	1042	74974	99557	996	70420	93204
	42	1278	118035	202864	1139	98503	164422	1092	92542	152960	1046	86828	113707	1000	81346	106238
	44	1142	117903	199748	1142	117903	199748	1096	110330	184995	1049	103128	171134	1003	96272	158104
	-5	1185	22244	32384	1045	19375	27807	999	18437	26352	952	17506	24929	906	16585	23541
	0	1191	23628	34544	1052	20582	29646	1006	19587	28089	959	18600	26568	913	17624	25084
	5	1198	25201	36990	1059	21950	31725	1012	20888	30051	966	19838	28419	920	18798	26825
	10	1203	27984	41143	1064	24349	35232	1017	23164	33356	971	21993	31526	924	20835	29742
	15	1212	31355	46060	1073	27258	39396	1026	25926	37284	980	24611	35225	934	23313	33219
	20	1221	35684	52302	1082	30976	44665	1035	29451	42249	989	27947	39895	943	26465	37604
1 4 0 0	25	1230	41420	60437	1091	35873	51504	1044	34084	48684	998	32324	45940	952	30592	43272
	30	1239	49283	71329	1100	42534	60608	1053	40370	57235	1007	38247	53959	960	36164	50778
	35	1248	60744	86735	1108	52136	73381	1062	49401	69203	1016	46727	65153	969	44114	61230
	40	1256	79182	110597	1117	67327	92910	1071	63609	87422	1024	59998	82124	978	56492	77013
	44	1263	104618	185346	1124	87771	118162	1078	82585	110834	1031	77592	103803	985	72784	97057
	-5	1172	20384	29991	1032	17746	25744	986	16882	24393	940	16026	23074	893	15176	21785
	0	1178	21583	31903	1039	18793	27372	993	17880	25931	946	16974	24523	900	16077	23149
	5	1185	22936	34056	1046	19972	29202	999	19002	27658	953	18042	26152	906	17090	24682
	10	1189	25307	37679	1050	22017	32260	1004	20944	30540	957	19880	28860	911	18829	27224
	15	1194	28229	42088	1055	24532	35978	1009	23328	34040	962	22137	32151	916	20961	30310
1 4 0 0	20	1203	31821	47405	1064	27625	40470	1017	26262	38274	971	24917	36134	925	23589	34051
	25	1212	36478	54203	1073	31615	46194	1026	30040	43661	980	28490	41198	933	26960	38798
	30	1221	42688	63079	1081	36900	53633	1035	35037	50656	989	33204	47761	942	31401	44946
	35	1229	51394	75201	1090	44248	63731	1044	41962	60129	997	39720	56633	951	37523	53241
	40	1238	64577	92976	1099	55234	78399	1052	52273	73847	1006	49385	69442	959	46566	65179
	44	1245	81256	114639	1105	68898	96037	1059	65031	90276	1012	61279	84719	966	57640	79364

Figure 4-27 (Sheet 11 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS OFF

FLAPS - 15°

5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-5	1159	18707	27809	1019	16275	23862	973	15478	22606	927	14687	21380	880	13901	20181
	0	1165	19750	29509	1026	17187	25308	980	16348	23973	933	15514	22668	887	14688	21395
	5	1172	20921	31414	1032	18207	26925	986	17319	25499	939	16438	24107	893	15565	22748
	10	1176	22949	34583	1037	19960	29602	990	18982	28020	944	18014	26476	897	17055	24971
	15	1180	25431	38429	1040	22097	32842	994	21009	31069	948	19933	29342	901	18867	27656
	20	1185	28511	43143	1046	24744	36811	999	23517	34804	953	22305	32849	906	21107	30944
	25	1193	32339	48890	1054	28032	41654	1008	26634	39364	961	25254	37135	915	23893	34965
	30	1202	37330	56244	1063	32297	47829	1016	30669	45172	970	29066	42587	924	27487	40074
	35	1210	44113	66011	1071	38052	55990	1025	36103	52836	978	34187	49770	932	32304	46792
	40	1219	53916	79748	1080	46289	67387	1033	43853	63511	987	41469	59754	940	39134	56112
1 3 0 0	44	1226	65569	95573	1086	55957	80392	1040	52917	75660	993	49951	71081	947	47059	66654
	-5	1146	17188	25810	1006	14941	22136	960	14203	20967	913	13471	19826	867	12744	18712
	0	1152	18099	27326	1013	15738	23426	966	14963	22185	920	14195	20974	873	13431	19791
	5	1158	19115	29017	1019	16626	24862	972	15809	23541	926	14999	22252	880	14196	20994
	10	1162	20859	31804	1023	18134	27215	976	17240	25756	930	16356	24334	884	15479	22947
	15	1166	22970	35154	1027	19953	30036	980	18966	28411	934	17990	26828	887	17021	25282
	20	1169	25578	39262	1030	22194	33489	984	21090	31659	937	19997	29875	891	18917	28138
	25	1175	28823	44299	1035	24976	37721	989	23726	35640	943	22490	33612	896	21267	31636
	30	1183	32891	50473	1044	28464	42912	997	27027	40521	951	25610	38195	905	24212	35932
	35	1191	38283	58490	1052	33057	49623	1006	31369	46827	959	29707	44108	913	28070	41465
1 2 5 0 0	40	1200	45791	69401	1060	39403	58707	1014	37353	55347	967	35338	52082	921	33361	48916
	44	1206	54302	81453	1067	46531	68672	1020	44051	64669	974	41625	60791	928	39249	57033
	-5	1145	15724	23735	1006	13680	20387	959	13007	19320	913	12339	18279	866	11675	17262
	0	1139	16596	25309	1000	14420	21688	953	13704	20536	907	12995	19413	861	12291	18316
	5	1144	17488	26830	1005	15198	22978	959	14446	21754	912	13699	20558	866	12959	19392
	10	1148	18996	29294	1009	16502	25056	962	15693	23708	916	14872	22395	870	14068	21114
	15	1152	20801	32226	1012	18058	27524	966	17161	26032	920	16271	24577	873	15389	23158
	20	1155	23004	35786	1016	19955	30518	969	18957	28845	923	17971	27218	877	16993	25630
	25	1158	25740	40167	1019	22300	34191	973	21179	32299	926	20069	30455	880	18971	28659
	30	1164	29153	45523	1024	25221	38681	978	23944	36519	932	22681	34412	885	21433	32362
1 2 0 0	35	1172	33508	52201	1033	28944	44280	986	27464	41779	940	26006	39347	893	24566	36980
	40	1180	39391	61053	1041	33940	51667	994	32181	48710	948	30451	45839	901	28747	43048
	44	1186	45816	70515	1047	39356	59521	1001	37282	56067	954	35246	52716	908	33247	49465
	-5	1154	14381	21718	1015	12535	18708	969	11928	17749	922	11323	16812	876	10723	15897
	0	1148	15113	23081	1009	13158	19836	963	12515	18804	916	11876	17795	870	11241	16811
	5	1142	15941	24612	1003	13861	21103	956	13177	19987	910	12498	18898	863	11823	17834
	10	1134	17322	27009	995	15035	23091	948	14283	21845	902	13538	20631	855	12798	19447
	15	1137	18873	29588	998	16373	25261	952	15554	23888	905	14740	22547	859	13934	21242
	20	1140	20747	32692	1001	17987	27869	955	17083	26339	908	16187	24848	862	15299	23394
	25	1143	23043	36469	1004	19957	31036	958	18949	29315	911	17950	27637	865	16962	26004
1 5 0 0	30	1146	25910	41117	1007	22410	34925	961	21269	32965	914	20140	31057	868	19024	29200
	35	1152	29525	46850	1013	25498	39721	966	24189	37468	920	22896	35276	873	21619	33144
	40	1160	34220	54152	1020	29497	45821	974	27969	43195	928	26462	40642	881	24975	38159
	44	1166	39195	61756	1027	33712	52148	980	31943	49125	934	30203	46188	887	28490	43337
	-5	1165	13200	19915	1025	11526	17204	979	10975	16341	933	10428	15498	886	9882	14673
	0	1158	13819	21103	1019	12055	18190	973	11474	17262	926	10896	16356	880	10322	15471
	5	1152	14515	22432	1012	12646	19289	966	12031	18289	919	11420	17313	873	10812	16359
	10	1134	15725	24663	995	13661	21118	948	12981	19990	902	12308	18892	855	11638	17819
	15	1123	17151	27200	983	14864	23209	937	14114	21943	891	13369	20708	844	12630	19505
	20	1126	18754	29920	986	16245	25494	940	15422	24090	893	14606	22721	847	13797	21387
1 1 0 0	25	1128	20693	33196	989	17911	28240	943	17001	26670	896	16098	25139	850	15204	23649
	30	1131	23085	37183	992	19959	31575	945	18937	29799	899	17927	28071	852	16925	26387
	35	1133	26108	42144	994	22539	35715	948	21376	33682	901	20225	31703	855	19088	29779
	40	1139	29956	48339	1000	25818	40884	953	24474	38531	907	23147	36242	860	21836	34017
	44	1145	33887	54563	1006	29159	46069	959	27627	43391	913	26119	40791	867	24632	38266
	-5	1175	12149	18290	1036	10629	15850	989	10126	15071	943	9627	14310	897	9131	13567
	0	1169	12679	19334	1029	11080	16714	983	10553	15880	936	10028	15063	890	9507	14267
	5	1162	13269	20495	1022	11582	17675	976	11027	16778	930	10474	15901	883	9924	15044
	10	1143	14281	22426	1004	12431	19259	958	11823	18252	911	11217	17268	865	10616	16309
	15	1125	15505	24726	985	13454	21139	939	12780	20001	893	12111	18890	846	11445	17806
1 1 0 0	20	1110	16980	27422	971	14693	23352	924	13942	22061	878	13197	20803	831	12456	19576
	25	1112	18630	30281	973	16110	25747	927	15285	24311	880	14465	22910	834	13652	21545
	30	1115	20641	33726	976	17833	28627	929	16914	27012	883	16004	25440	836	15101	23909
	35	1117	23147	37959	978	19974	32158	931	18937	30323	885	17912	28538	839	16896	26801
	40	1119	26349	43302	980	22698	36602	933	21508	34486	887	20333	32428	841	19171	30428
	44	1123	29545	48548	984	25415	40967	938	24073	38575	891	22748	36251	845	21441	33994



Figure 4-27 (Sheet 12 of 22)

FLAPS - 15⁰
6000 FEET

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT		THIRD FT	FIRST FT		THIRD FT	10KTS			20KTS			30KTS		
		FT	FT	FT	FT	FT	FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	
1 6 3 0 0	-10	1244	32076	44992	1105	27978	38681	1058	26646	36676	1012	25331	34720	966	24033	32813
	-5	1254	34527	48469	1115	30109	41651	1069	28677	39489	1022	27262	37378	976	25867	35321
	0	1265	37450	52578	1125	32641	45153	1079	31085	42801	1033	29551	40507	986	28038	38271
	5	1275	41499	58154	1135	36129	49886	1089	34396	47270	1043	32690	44723	996	31009	42240
	10	1285	47789	66584	1145	41505	57001	1099	39487	53978	1053	37503	51035	1006	35554	48172
	15	1295	56422	77914	1155	48824	66505	1109	46397	62917	1062	44019	59432	1016	41691	56049
	20	1304	69556	94731	1165	59823	80476	1119	56742	76019	1072	53738	71703	1026	50808	67523
	25	1314	90712	120871	1175	77214	101870	1128	73004	95988	1082	68928	90319	1035	64979	84854
1 6 0 0	29	1322	119613	187943	1182	100341	154178	1136	94451	121407	1089	88800	113856	1043	83375	106624
	30	1323	129973	204304	1184	108460	166775	1138	101931	155555	1091	95688	144915	1045	89713	113973
	31				1186	118027	181594	1140	110714	169076	1093	103747	157243	1047	97103	146051
	-15	1224	28405	40095	1085	24771	34470	1039	23588	32682	992	22416	30935	946	21259	29231
	-10	1234	30286	42821	1095	26414	36804	1049	25155	34893	1002	23910	33027	956	22680	31207
	-5	1245	32507	46014	1105	28348	39534	1059	26998	37478	1013	25664	35471	966	24347	33514
	0	1255	35136	49765	1116	30632	42736	1069	29171	40506	1023	27730	38332	976	26307	36212
	5	1265	38748	54814	1126	33750	47026	1079	32132	44558	1033	30539	42155	986	28969	39813
1 5 5 0 0	10	1275	44286	62354	1135	38495	53399	1089	36630	50569	1043	34795	47815	996	32990	45133
	15	1284	51752	72324	1145	44847	61781	1099	42634	58460	1052	40463	55232	1006	38334	52095
	20	1294	62822	86780	1155	54166	73836	1108	51414	69779	1062	48725	65845	1016	46097	62030
	25	1304	79954	108435	1164	68368	91677	1118	64729	86465	1072	61194	81431	1025	57756	76566
	30	1313	109679	175018	1174	92395	120697	1127	87077	113432	1081	81960	106461	1035	77034	99771
	31	1315	118511	189337	1176	99386	155118	1129	93538	121037	1083	87928	113483	1036	82539	106246
	-15	1212	25900	36974	1072	22585	31782	1026	21504	30131	980	20434	28519	933	19374	26945
	-10	1219	27570	39479	1080	24040	33918	1033	22889	32150	987	21751	30424	940	20625	28740
1 5 0 0																

 Figure 4-27 (Sheet 13 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS OFF

FLAPS - 15°

6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-5	1174	20293	30504	1035	17674	26168	988	16815	24789	942	15964	23442	895	15119	22128
	0	1180	21528	32508	1041	18750	27871	995	17841	26398	948	16939	24958	902	16046	23555
	5	1186	23144	35087	1046	20152	30056	1000	19174	28459	954	18205	26900	907	17245	25380
	10	1190	25456	38698	1051	22148	33107	1005	21068	31332	958	19999	29601	912	18942	27915
	15	1195	28287	43067	1056	24585	36790	1010	23380	34802	963	22188	32863	917	21010	30974
	20	1204	31891	48535	1065	27689	41409	1019	26324	39153	972	24976	36956	926	23647	34818
	25	1213	36552	55504	1074	31683	47275	1027	30106	44674	981	28554	42145	935	27023	39683
	30	1222	42843	64692	1083	37038	54974	1036	35167	51910	990	33329	48934	943	31521	46042
	35	1230	51765	77392	1091	44565	65546	1045	42262	61828	998	40004	58220	952	37791	54721
	40	1239	65232	95898	1100	55782	80807	1053	52789	76098	1007	49870	71543	960	47021	67136
1 3 5 0 0	42	1242	72783	105978	1103	61997	89044	1057	58600	83778	1010	55295	78692	964	52079	73780
	-5	1161	18569	28213	1021	16160	24191	975	15371	22914	928	14586	21664	882	13809	20447
	0	1167	19639	29988	1027	17094	25700	981	16260	24338	934	15432	23007	888	14612	21709
	5	1172	21028	32257	1033	18301	27623	986	17407	26150	940	16523	24715	893	15645	23314
	10	1176	22993	35402	1037	19999	30279	990	19019	28652	944	18050	27066	898	17090	25520
	15	1180	25386	39202	1041	22061	33480	995	20976	31667	948	19901	29897	902	18839	28175
	20	1185	28455	44025	1046	24698	37539	1000	23475	35485	953	22266	33484	907	21071	31535
	25	1194	32260	49887	1055	27967	42478	1008	26573	40135	962	25198	37854	915	23840	35634
	30	1202	37278	57459	1063	32255	48834	1017	30631	46112	970	29031	43465	924	27454	40890
	35	1211	44160	67619	1072	38094	57319	1025	36142	54077	979	34225	50929	932	32341	47873
1 2 5 0 0	40	1219	54040	81781	1080	46395	69064	1034	43955	65079	987	41565	61216	941	39226	57474
	42	1223	59334	89188	1083	50803	75165	1037	48092	70783	991	45442	66539	944	42850	62430
	-5	1147	17011	26117	1008	14792	22384	961	14063	21197	915	13340	20039	868	12621	18907
	0	1153	17942	27696	1013	15604	23724	967	14838	22463	921	14077	21232	874	13321	20029
	5	1158	19141	29700	1019	16648	25424	972	15830	24064	926	15019	22739	879	14214	21445
	10	1162	20822	32455	1023	18101	27748	976	17209	26253	930	16326	24796	883	15450	23375
	15	1166	22845	35751	1026	19845	30524	980	18865	28867	934	17894	27251	887	16931	25676
	20	1169	25426	39932	1030	22064	34038	984	20968	32172	937	19882	30352	891	18808	28580
	25	1174	28633	45054	1035	24815	38340	989	23573	36216	942	22344	34147	896	21131	32134
	30	1183	32700	51385	1043	28299	43658	997	26872	41218	951	25465	38845	904	24074	36534
1 2 5 0 0	35	1191	38121	59672	1052	32920	50596	1005	31239	47734	959	29585	44953	912	27955	42251
	40	1199	45607	70836	1060	39249	59888	1014	37207	56447	967	35201	53107	921	33233	49869
	42	1203	49481	76499	1063	42501	64576	1017	40267	60837	970	38075	57209	924	35927	53694
	-5	1153	15483	23837	1014	13486	20479	967	12828	19410	921	12176	18368	875	11528	17350
	0	1145	16366	25478	1005	14232	21834	959	13531	20675	913	12835	19545	866	12143	18441
	5	1143	17448	27376	1004	15162	23422	958	14412	22167	911	13666	20940	865	12927	19745
	10	1147	18892	29799	1008	16411	25466	962	15598	24091	915	14791	22750	869	13991	21442
	15	1151	20614	32676	1012	17897	27888	965	17007	26369	919	16126	24890	872	15251	23446
	20	1154	22782	36284	1015	19763	30921	969	18777	29222	922	17799	27565	876	16831	25952
	25	1158	25464	40708	1018	22063	34630	972	20954	32707	926	19857	30833	879	18770	29008
1 5 0 0	30	1163	28864	46193	1023	24973	39226	977	23708	37025	930	22457	34881	884	21221	32795
	35	1171	33211	53062	1031	28687	44980	985	27222	42431	939	25776	39952	892	24349	37541
	40	1179	39023	62063	1039	33625	52489	993	31883	49475	947	30170	46549	900	28482	43706
	42	1182	41949	66519	1043	36098	56193	996	34213	52945	950	32362	49794	903	30540	46735
	-5	1163	14136	21765	1024	12336	18753	977	11743	17794	931	11155	16858	885	10570	15944
	0	1154	14871	23181	1015	12959	19923	969	12330	18887	922	11704	17874	876	11083	16886
	5	1142	15838	25004	1003	13773	21422	957	13095	20285	910	12420	19173	864	11751	18090
	10	1132	17168	27394	993	14899	23399	947	14155	22131	900	13415	20894	854	12681	19687
	15	1136	18641	29916	997	16171	25521	950	15361	24127	904	14558	22768	857	13760	21443
	20	1139	20475	33052	1000	17751	28156	953	16858	26603	907	15974	25090	861	15098	23618
1 1 0 0	25	1142	22713	36850	1003	19672	31340	956	18677	29594	910	17693	27895	864	16719	26241
	30	1145	25545	41573	1006	22095	35290	959	20969	33302	913	19857	31369	866	18755	29486
	35	1150	29140	47466	1010	25164	40214	964	23872	37925	918	22596	35698	871	21334	33532
	40	1158	33743	54853	1018	29087	46384	972	27580	43716	925	26092	41121	879	24627	38602
	42	1161	36008	58439	1021	31010	49371	975	29394	46516	929	27802	43742	882	26233	41048
	-5	1173	12951	19915	1034	11323	17210	988	10787	16349	941	10253	15506	895	9723	14685
	0	1164	13570	21148	1025	11848	18228	979	11281	17299	932	10716	16390	886	10156	15505
	5	1152	14376	22723	1013	12528	19525	966	11918	18506	920	11314	17514	874	10713	16546
	10	1135	15518	24895	995	13483	21304	949	12815	20164	903	12151	19052	856	11490	17966
	15	1120	16884	27427	981	14631	23383	934	13891	22101	888	13157	20851	842	12428	19633
1 1 0 0	20	1123	18447	30169	984	15977	25685	937	15167	24264	891	14364	22879	845	13567	21530
	25	1126	20328	33454	987	17594	28439	940	16698	26850	894	15811	25303	847	14930	23795
	30	1128	22680	37493	989	19607	31816	943	18604	30021	896	17609	28271	850	16625	26570
	35	1131	25659	42548	991	22148	36031	945	21005	33973	899	19874	31970	852	18754	30021
	40	1136	29423	48820	996	25354	41257	950	24033	38873	903	22727	36554	857	21439	34302
	42	1139	31213	51761	999	26878	43709	953	25472	41171	906	24084	38705	860	22715	36310



Figure 4-27 (Sheet 14 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS OFF

FLAPS - 15°

7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE


WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-20	1244	31655	44410	1104	27615	38188	1058	26302	36212	1011	25004	34282	965	23724	32401
6	-15	1254	33814	47509	1115	29499	40843	1069	28099	38727	1022	26716	36663	976	25352	34650
3	-10	1265	36297	51048	1126	31659	43868	1079	30155	41591	1033	28673	39371	986	27210	37205
0	-5	1275	39367	55376	1136	34318	47558	1090	32685	45081	1043	31076	42667	997	29491	40315
0	0	1286	43015	60468	1146	37464	51885	1100	35674	49171	1054	33913	46528	1007	32178	43953
0	5	1296	46672	68120	1157	42307	58354	1110	40262	55272	1064	38253	52273	1017	36280	49357
	10	1306	56561	78545	1167	49006	67114	1120	46592	63519	1074	44227	60026	1028	41911	56635
	15	1316	68439	93860	1177	58982	79872	1130	55984	75495	1084	53060	71254	1038	50207	67146
	20	1326	87910	118146	1187	75057	99826	1140	71037	94144	1094	67142	88664	1048	63363	83376
	25	1336	123131	193828	1197	103301	159105	1150	97248	148667	1104	91447	117588	1057	85880	110150
	27				1201	121749	187250	1154	114206	174394	1108	107028	162245	1061	100188	150757
1	-15	1244	31860	45135	1105	27794	38793	1059	26473	36780	1012	25168	34815	966	23879	32899
6	-10	1255	34099	48373	1116	29746	41565	1069	28332	39403	1023	26938	37297	976	25561	35241
0	-5	1265	36849	52311	1126	32133	44925	1080	30605	42583	1033	29098	40300	987	27613	38077
0	0	1276	40091	56909	1136	34935	48838	1090	33269	46283	1044	31629	43795	997	30012	41370
0	5	1286	45060	63743	1147	39201	54624	1100	37314	51743	1054	35459	48940	1007	33634	46210
	10	1296	51876	72913	1157	45012	62350	1110	42811	59021	1064	40653	55787	1017	38534	52641
	15	1306	61903	86101	1167	53476	73377	1120	50793	69384	1074	48171	65512	1027	45606	61755
	20	1316	77747	106319	1176	66660	90090	1130	63170	85036	1084	59777	80150	1037	56474	75425
	25	1325	104669	139269	1186	88557	116825	1140	83579	109925	1093	78780	103293	1047	74150	96920
	27	1329	121667	194415	1190	102060	159444	1144	96073	124710	1097	90332	116960	1051	84822	109539
	30													1057	108177	165052
1	-20	1219	27222	38975	1080	23741	33494	1033	22606	31751	987	21484	30050	941	20374	28390
5	-15	1228	28932	41542	1089	25235	35689	1042	24030	33828	996	22840	32014	949	21662	30242
5	-10	1238	30830	44356	1099	26893	38098	1053	25613	36112	1006	24347	34173	960	23098	32283
0	-5	1249	33139	47746	1109	28902	40993	1063	27527	38852	1016	26168	36762	970	24828	34727
0	0	1259	35826	51661	1119	31234	44332	1073	29747	42011	1027	28279	39747	980	26831	37540
0	5	1269	39877	57385	1129	34726	49190	1083	33062	46597	1037	31422	44071	990	29807	41612
	10	1279	45308	64907	1139	39379	55545	1093	37470	52590	1046	35593	49713	1000	33749	46917
	15	1288	53037	75405	1149	45949	64364	1103	43680	60890	1056	41455	57514	1010	39273	54235
	20	1298	64663	90794	1159	55724	77183	1112	52885	72921	1066	50113	68791	1020	47405	64788
	25	1308	82936	114128	1168	70839	96373	1122	67047	90860	1076	63366	85538	1029	59791	80399
	30	1317	116042	190416	1178	97475	128741	1132	91787	120904	1085	86325	113394	1039	81075	106195
1	-10	1222	27967	40788	1082	24388	35014	1036	23222	33181	990	22069	31392	943	20928	29646
5	-5	1231	29927	43742	1092	26098	37539	1046	24852	35571	999	23620	33650	953	22404	31778
0	0	1241	32179	47110	1102	28058	40415	1056	26720	38292	1009	25397	36221	963	24092	34203
0	5	1251	35524	51964	1112	30951	44540	1066	29469	42189	1019	28006	39897	973	26564	37665
	10	1261	39923	58230	1122	34735	49847	1075	33058	47195	1029	31407	44614	982	29781	42101
	15	1271	46018	66771	1131	39943	57044	1085	37989	53975	1038	36068	50991	992	34181	48090
	20	1280	54836	78860	1141	47415	67166	1094	45042	63491	1048	42718	59923	1002	40440	56460
	25	1290	67925	96258	1150	58369	81599	1104	55343	77018	1057	52391	72583	1011	49512	68291
	30	1299	89496	123756	1160	76085	104076	1113	71901	97987	1067	67851	92120	1020	63926	86464
	34	1306	120100	203116	1167	100513	165647	1121	94535	154428	1074	88802	117569	1028	83301	109980
	35	1308	131136	222401	1169	109126	180356	1123	102460	167851	1076	96090	156020	1030	89998	144824
1	-5	1216	27088	40130	1076	23616	34424	1030	22485	32613	983	21364	30845	937	20257	29121
5	0	1224	29026	43120	1085	25303	36973	1038	24090	35021	992	22892	33119	945	21707	31264
0	5	1233	31817	47277	1094	27723	40509	1048	26393	38364	1001	25078	36271	955	23781	34234
0	10	1243	35428	52565	1104	30839	44994	1057	29351	42596	1011	27885	40262	964	26437	37987
	15	1252	40320	59631	1113	35038	50962	1067	33333	48224	1020	31652	45556	974	29999	42963
	20	1262	47184	69363	1123	40887	59138	1076	38863	55916	1030	36876	52785	983	34923	49742
	25	1271	56930	82819	1132	49115	70368	1085	46620	66460	1039	44179	62670	993	41790	58994
	30	1280	71952	102827	1141	61621	86891	1095	58360	81923	1048	55184	77119	1002	52091	72475
	35	1289	97698	135561	1150	82581	113446	1104	77896	106636	1057	73372	100087	1011	69004	93791
	38	1295	123528	217959	1156	103025	176624	1109	96786	164318	1063	90814	152674	1016	85089	113291
	40							1113	115462	198682	1066	107913	183807	1020	100738	169833
1	-10	1195	23075	34461	1056	20117	29573	1010	19149	28019	963	18190	26502	917	17241	25023
4	-5	1202	24541	36806	1063	21394	31568	1016	20365	29904	970	19348	28281	924	18340	26697
0	0	1209	26210	39462	1069	22844	33825	1023	21747	32037	977	20661	30292	930	19585	28589
0	5	1215	28621	43176	1076	24931	36974	1030	23729	35007	983	22541	33089	937	21367	31220
	10	1225	31619	47687	1085	27524	40802	1039	26194	38622	993	24881	36498	946	23583	34427
	15	1234	35605	53616	1095	30958	45819	1048	29451	43351	1002	27967	40950	956	26503	38612
	20	1243	41054	61598	1104	35622	52540	1058	33869	49681	1011	32143	46899	965	30445	44195
	25	1252	48528	72298	1113	41972	61505	1067	39868	58108	1020	37802	54809	974	35774	51604
	30	1261	59483	87502	1122	51182	74146	1076	48539	69962	1029	45954	65907	983	43427	61978
	35	1270	76790	110603	1131	65503	93122	1085	61955	87690	1038	58505	82442	992	55151	77376
	40	1279	107137	195610	1140	89963	123966	1094	84681	116316	1047	79598	108977	1001	74704	101937



Figure 4-27 (Sheet 15 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-10	1182	21037	31775	1043	18332	27259	996	17445	25823	950	16567	24422	903	15696	23054
	-5	1188	22294	33835	1049	19429	29013	1003	18491	27480	956	17562	25984	910	16641	24525
	0	1195	23716	36156	1056	20667	30985	1009	19670	29343	963	18683	27741	916	17705	26178
	5	1200	25768	39410	1061	22443	33740	1015	21358	31941	968	20284	30187	922	19221	28476
	10	1206	28348	43431	1067	24670	37141	1020	23472	35146	974	22288	33203	928	21117	31309
	15	1215	31636	48465	1076	27508	41400	1030	26168	39165	983	24843	36986	937	23536	34865
	20	1224	36034	55112	1085	31286	47008	1039	29749	44447	992	28232	41952	946	26738	39527
	25	1233	41897	63802	1094	36292	54308	1048	34485	51314	1001	32706	48402	955	30957	45573
	30	1242	50164	75730	1103	43292	64269	1056	41089	60667	1010	38929	57171	964	36810	53778
1 2 5 0 0	35	1251	62466	92912	1112	53585	78492	1065	50765	73985	1019	48012	69622	972	45321	65397
	40	1260	82044	119024	1120	69678	99819	1074	65809	93871	1028	62055	88136	981	58411	82605
	-10	1168	19213	29341	1029	16732	25161	982	15917	23831	936	15110	22534	890	14310	21269
	-5	1175	20298	31162	1035	17679	26710	989	16821	25295	942	15970	23914	896	15126	22567
	0	1181	21516	33200	1042	18742	28443	995	17833	26931	949	16933	25457	902	16040	24018
	5	1186	23258	36033	1047	20251	30840	1000	19267	29192	954	18294	27585	907	17329	26017
	10	1191	25439	39533	1051	22134	33797	1005	21056	31978	959	19989	30205	912	18933	28477
	15	1196	28249	43993	1057	24555	37557	1010	23351	35518	964	22163	33534	918	20987	31600
	20	1205	31846	49599	1066	27653	42290	1019	26290	39977	973	24946	37727	926	23618	35535
1 2 5 0 0	25	1214	36531	56778	1074	31666	48329	1028	30093	45663	982	28542	43069	935	27012	40544
	30	1222	42933	66363	1083	37117	56358	1037	35244	53208	990	33401	50145	944	31590	47172
	35	1231	52034	79624	1092	44794	67393	1045	42477	63554	999	40208	59833	953	37984	56225
	40	1240	65554	98575	1100	56051	83013	1054	53043	78160	1007	50108	73466	961	47246	68928
	-10	1154	17571	27123	1015	15289	23248	969	14540	22016	922	13796	20813	876	13058	19640
	-5	1161	18511	28737	1021	16111	24621	975	15324	23313	928	14542	22036	882	13767	20790
	0	1167	19560	30536	1027	17026	26148	981	16196	24756	934	15372	23396	888	14556	22071
	5	1172	21048	33016	1032	18317	28248	986	17423	26735	939	16536	25258	893	15658	23819
	10	1176	22891	36052	1037	19911	30813	990	18936	29150	944	17972	27531	898	17016	25952
1 2 5 0 0	15	1180	25251	39913	1041	21945	34065	995	20867	32213	948	19798	30406	902	18742	28648
	20	1185	28298	44841	1046	24564	38211	999	23347	36111	953	22146	34068	907	20958	32078
	25	1194	32096	50852	1054	27827	43273	1008	26441	40877	962	25074	38547	915	23723	36278
	30	1202	37158	58702	1063	32153	49859	1017	30535	47071	970	28939	44357	924	27369	41722
	35	1211	44096	69223	1071	38039	58641	1025	36091	55313	979	34177	52082	932	32296	48946
	40	1219	53882	83589	1080	46263	70552	1033	43830	66469	987	41449	62513	941	39117	58680
	-10	1153	16008	24859	1013	13937	21333	967	13257	20212	921	12582	19119	874	11910	18050
	-5	1146	16902	26526	1007	14697	22714	961	13973	21504	914	13254	20322	868	12540	19169
	0	1152	17809	28119	1013	15490	24068	966	14728	22781	920	13973	21526	874	13224	20302
1 2 5 0 0	5	1157	19087	30302	1018	16599	25914	971	15783	24521	925	14974	23163	878	14171	21838
	10	1161	20654	32950	1022	17956	28152	976	17072	26629	929	16196	25145	883	15327	23697
	15	1165	22638	36287	1026	19667	30961	979	18695	29273	933	17734	27629	887	16781	26027
	20	1169	25181	40531	1030	21854	34529	983	20767	32627	937	19693	30776	890	18629	28972
	25	1173	28370	45774	1034	24588	38928	988	23358	36764	941	22141	34656	895	20939	32606
	30	1182	32438	52299	1042	28074	44408	996	26659	41917	950	25262	39494	903	23883	37137
	35	1190	37851	60825	1051	32688	51540	1004	31019	48614	958	29376	45772	911	27758	43011
	40	1198	45184	72064	1059	38890	60892	1013	36868	57384	966	34882	53979	920	32932	50677
	1 1 5 0 0	-10	1162	14575	22649	1023	12716	19494	977	12104	18490	930	11495	17508	884	10891
-5		1155	15324	24104	1015	13350	20696	969	12702	19613	923	12057	18555	876	11416	17523
0		1147	16175	25742	1007	14070	22048	961	13379	20876	914	12692	19731	868	12011	18615
5		1142	17335	27843	1003	15062	23800	956	14315	22516	910	13575	21265	863	12839	20043
10		1146	18676	30167	1007	16223	25761	960	15418	24363	914	14620	23000	867	13828	21672
15		1150	20356	33069	1010	17673	28204	964	16794	26661	918	15924	25160	871	15060	23695
20		1153	22480	36719	1014	19501	31271	967	18527	29545	921	17563	27865	875	16607	26227
25		1156	25125	41214	1017	21770	35039	971	20676	33086	924	19592	31183	878	18521	29332
30		1161	28512	46859	1021	24667	39764	975	23417	37523	928	22180	35341	882	20959	33221
1 1 0 0 0	35	1169	32814	53884	1029	28345	45647	983	26896	43049	937	25467	40524	890	24056	38070
	40	1177	38457	62892	1037	33140	53159	991	31424	50097	945	29735	47123	898	28071	44236
	-10	1173	13324	20688	1033	11645	17856	987	11093	16956	941	10544	16076	894	9996	15215
	-5	1165	13950	21949	1025	12178	18900	979	11594	17930	933	11014	16983	886	10437	16058
	0	1156	14655	23358	1017	12776	20066	970	12157	19019	924	11542	17997	878	10931	17000
	5	1142	15668	25318	1003	13627	21676	957	12956	20520	910	12289	19391	864	11627	18291
	10	1130	16916	27658	991	14678	23603	944	13943	22317	898	13214	21064	852	12490	19842
	15	1134	18347	30196	994	15913	25738	948	15116	24326	901	14323	22948	855	13538	21607
	20	1137	20135	33358	997	17453	28393	951	16576	26822	905	15705	25290	858	14842	23799
1 1 0 0 0	25	1140	22332	37206	1000	19340	31620	954	18362	29852	907	17393	28131	861	16434	26456
	30	1142	25125	42025	1003	21730	35649	957	20623	33634	910	19526	31671	864	18443	29765
	35	1146	28671	48048	1007	24756	40677	961	23483	38350	914	22225	36088	868	20983	33890
	40	1154	33107	55407	1015	28538	46821	968	27057	44116	922	25597	41488	876	24157	38933

 Figure 4-27 (Sheet 16 of 22)

FLAPS - 15⁰
8000 FEET

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT		THIRD FT	FIRST FT		THIRD FT	10KTS			20KTS			30KTS		
		SECOND FT	THIRD FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT		
1 6 3 0 0	-25	1253	33541	47115	1114	29262	40507	1068	27873	38409	1021	26502	36363	975	25148	34367
	-20	1264	35853	50432	1125	31278	43349	1079	29795	41102	1032	28331	38909	986	26888	36773
	-15	1275	38500	54211	1136	33578	46578	1090	31985	44159	1043	30415	41801	997	28868	39503
	-10	1286	41669	58689	1147	36321	50395	1100	34593	47768	1054	32894	45212	1008	31220	42721
	-5	1297	45587	64154	1157	39696	55038	1111	37799	52157	1065	35935	49354	1018	34100	46623
	0	1307	50537	70945	1168	43938	60785	1122	41821	57582	1075	39741	54465	1029	37701	51436
	5	1318	58026	80889	1179	50302	69149	1132	47835	65457	1086	45420	61873	1039	43054	58392
	10	1328	68137	94005	1189	58813	80102	1142	55856	75749	1096	52970	71530	1050	50154	67444
	15	1338	86421	116986	1199	73954	99038	1153	70051	93466	1106	66262	88085	1060	62587	82893
1 6 3 0 0	20	1349	118667	186922	1209	99954	130298	1163	94222	122510	1116	88716	115045	1070	83426	107891
	22				1213	116446	179597	1167	109422	167567	1120	102720	156169	1074	96319	145366
	-20	1254	33697	47810	1115	29400	41088	1069	28005	38955	1022	26628	36875	976	25269	34846
	-15	1265	36072	51254	1126	31469	44036	1080	29977	41747	1033	28505	39515	987	27053	37339
	-10	1276	38896	55310	1137	33919	47497	1090	32308	45022	1044	30722	42611	997	29158	40261
	-5	1287	42357	60222	1147	36908	51676	1101	35150	48973	1054	33419	46340	1008	31716	43778
	0	1297	46682	66265	1158	40628	56802	1111	38679	53813	1065	36764	50905	1019	34882	48076
	5	1307	53129	74987	1168	46128	64157	1122	43885	60746	1075	41684	57430	1029	39527	54209
	10	1318	61659	86280	1178	53345	73623	1132	50698	69651	1086	48109	65797	1039	45575	62056
1 5 5 0 0	15	1328	76569	105459	1189	65789	89522	1142	62390	84551	1096	59084	79746	1049	55864	75096
	20	1338	101376	136122	1199	86058	114505	1152	81311	107843	1106	76729	101435	1059	72302	95268
	22	1342	116618	186885	1203	98250	129092	1156	92617	121366	1110	87206	113961	1063	82001	106857
	25				1209	125229	195380	1162	117436	181918	1116	110028	169206	1069	102977	157194
	-20	1238	30487	43867	1099	26597	37684	1052	25331	35720	1006	24081	33805	959	22845	31936
	-15	1248	32486	46841	1109	28344	40233	1063	26998	38136	1016	25669	36090	970	24357	34096
	-10	1259														

 Figure 4-27 (Sheet 17 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

 Figure 4-27 (Sheet 18 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES
ANTI - ICE SYSTEMS OFF
FLAPS - 15°
9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE


WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1263	35723	50225	1124	31162	43168	1077	29683	40929	1031	28224	38746	985	26786	36618
6	-25	1274	38250	53834	1135	33362	46258	1089	31780	43857	1042	30220	41515	996	28683	39234
3	-20	1286	41132	57940	1146	35862	49765	1100	34160	47177	1054	32484	44655	1007	30833	42199
0	-15	1297	44491	62684	1158	38766	53807	1111	36921	51000	1065	35106	48267	1018	33320	45605
0	-10	1308	48716	68560	1169	42400	58795	1122	40370	55713	1076	38376	52713	1029	36417	49796
0	-5	1319	53926	75704	1179	46856	64835	1133	44592	61411	1087	42373	58085	1040	40195	54851
	0	1330	60960	85123	1190	52829	72757	1144	50238	68873	1097	47702	65103	1051	45222	61445
	5	1340	70703	97840	1201	61026	83376	1154	57962	78852	1108	54974	74469	1062	52059	70224
	10	1351	86086	117302	1211	73788	99446	1165	69934	93898	1119	66194	88542	1072	62562	83368
	15	1361	116556	182682	1222	98444	129265	1175	92882	121635	1129	87537	114317	1083	82395	107296
	18				1228	123178	189339	1182	115679	176623	1135	108538	164589	1089	101732	153197
1	-25	1264	35849	50912	1125	31275	43744	1079	29792	41471	1032	28329	39254	986	26887	37094
6	-20	1276	38417	54634	1136	33508	46927	1090	31920	44486	1044	30355	42106	997	28811	39787
0	-15	1287	41388	58906	1147	36084	50572	1101	34371	47935	1055	32685	45367	1008	31024	42864
0	-10	1298	45090	64151	1158	39278	55034	1112	37406	52153	1065	35564	49347	1019	33754	46618
0	-5	1308	49602	70462	1169	43153	60383	1123	41082	57204	1076	39048	54112	1030	37051	51105
	0	1319	55608	78673	1180	48277	67311	1133	45931	63735	1087	43633	60261	1041	41381	56887
	5	1330	63765	89558	1190	55178	76437	1144	52447	72323	1098	49778	68332	1051	47167	64460
	10	1340	76273	105771	1201	65639	89908	1154	62284	84958	1108	59019	80171	1062	55839	75538
	15	1350	99774	135007	1211	84902	113800	1165	80286	107256	1118	75825	100956	1072	71513	94891
	18	1357	122484	195794	1217	103070	161266	1171	97137	127449	1124	91443	119665	1078	85977	112208
	20				1221	120403	188448	1175	113098	175762	1129	106137	163754	1082	99495	152382
1	-20	1259	34436	49733	1119	30046	42710	1073	28622	40484	1027	27217	38313	980	25829	36196
5	-15	1270	36887	53359	1130	32179	45811	1084	30655	43420	1037	29151	41089	991	27669	38819
0	-10	1280	39897	57756	1141	34789	49561	1095	33138	46967	1048	31511	44440	1002	29909	41980
0	-5	1291	43509	62971	1152	37907	53995	1105	36100	51157	1059	34323	48396	1012	32573	45707
	0	1301	48217	69626	1162	41949	59632	1116	39934	56479	1069	37954	53412	1023	36009	50430
	5	1312	54443	78233	1173	47258	66887	1126	44957	63316	1080	42703	59848	1033	40492	56478
	10	1322	63620	90596	1183	55012	77236	1136	52273	73046	1090	49598	68985	1044	46982	65047
	15	1332	79747	111548	1193	68439	94570	1147	64882	89285	1100	61424	84176	1054	58060	79238
	20	1342	107035	145470	1203	90642	122113	1157	85581	114935	1110	80703	108038	1064	76000	101411
	22	1346	124550	204620	1207	104558	167921	1161	98460	156898	1114	92614	122326	1068	87006	114609
	25													1074	111156	173634
1	-25	1231	29205	42694	1091	25476	36654	1045	24262	34736	998	23061	32864	952	21876	31041
5	-20	1241	31010	45457	1102	27057	39023	1056	25772	36983	1009	24501	34991	963	23246	33049
0	-15	1252	33058	48572	1113	28846	41692	1066	27477	39509	1020	26127	37382	974	24794	35309
0	-10	1263	35542	52307	1123	31006	44881	1077	29536	42529	1031	28086	40237	984	26654	38002
	-5	1273	38480	56682	1134	33554	48810	1087	31959	46504	1041	30389	43567	995	28841	41144
	0	1283	42248	62181	1144	36804	53280	1098	35047	50467	1051	33318	47729	1005	31616	45065
	5	1294	47122	69151	1154	40985	59177	1108	39012	56032	1062	37073	52973	1015	35166	49997
	10	1304	54089	78887	1165	46918	67369	1118	44622	63746	1072	42372	60227	1025	40165	56809
	15	1314	65729	94643	1175	56716	80509	1128	53854	76084	1082	51060	71797	1035	48330	67642
	20	1324	83876	118306	1185	71750	100000	1138	67947	94314	1092	64257	88826	1045	60673	83528
	25	1334	117116	197552	1194	98537	162228	1148	92845	125104	1101	87378	117395	1055	82123	110005
1	-15	1234	29760	44389	1095	25964	38082	1049	24729	36082	1002	23507	34129	956	22300	32227
5	-10	1245	31832	47595	1105	27772	40824	1059	26452	38676	1013	25150	36585	966	23862	34544
0	-5	1255	34254	51311	1116	29880	43997	1069	28459	41678	1023	27059	39420	976	25676	37220
0	0	1265	37317	55922	1126	32532	47920	1079	30982	45387	1033	29455	42921	987	27949	40519
	5	1275	41208	61671	1136	35886	52797	1090	34168	49994	1043	32475	47263	997	30810	44609
	10	1285	46632	69523	1146	40532	59427	1100	38570	56244	1053	36641	53148	1007	34746	50139
	15	1295	55348	81791	1156	47929	69712	1109	45556	65916	1063	43232	62233	1017	40955	58658
	20	1305	68152	99252	1166	58667	84225	1119	55661	79528	1073	52729	74981	1026	49868	70579
	25	1314	89409	127005	1175	76166	106960	1129	72033	100756	1082	68028	94774	1036	64147	89010
	29	1322	119249	206859	1183	100066	169199	1136	94200	157895	1090	88573	120270	1044	83170	112596
	30	1324	130123	225693	1185	108587	183656	1138	102051	171116	1092	95803	159240	1046	89822	147987
1	-5	1237	30653	46661	1097	26735	39989	1051	25462	37876	1004	24203	35814	958	22960	33807
4	0	1247	33174	50573	1107	28927	43325	1061	27548	41029	1014	26186	38791	968	24843	36614
0	5	1256	36329	55385	1117	31658	47416	1071	30144	44894	1024	28651	42437	978	27180	40048
0	10	1266	40639	61840	1127	35366	52877	1081	33663	50047	1034	31985	47292	988	30334	44613
	15	1276	47349	71643	1137	41095	61126	1090	39084	57813	1044	37110	54594	997	35169	51465
	20	1285	56770	85046	1146	49066	72332	1100	46607	68343	1053	44198	64472	1007	41839	60718
	25	1295	71372	105070	1156	61257	88906	1109	58060	83865	1063	54946	78989	1016	51911	74274
	30	1304	96153	137466	1165	81506	115275	1119	76595	108434	1072	72564	101850	1026	68315	95516
	33	1310	119718	216410	1171	100269	176209	1124	94328	164187	1078	88632	152789	1031	83164	113987
	35				1174	118194	210288	1128	110798	195195	1082	103756	180979	1035	97044	167583
	36										1083	113447	199316	1037	105888	184142



Figure 4-27 (Sheet 19 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	10KTS			20KTS			30KTS		
								FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 3 5 0 0	-10	1212	25772	39666	1072	22476	33995	1026	21401	32196	979	20336	30440	933	19283	28730
	-5	1219	27524	42542	1079	24000	36441	1033	22852	34507	987	21716	32620	940	20592	30781
	0	1228	29644	45939	1088	25844	39334	1042	24607	37240	995	23385	35201	949	22177	33213
	5	1237	32236	50017	1098	28095	42804	1052	26749	40520	1005	25420	38295	959	24108	36129
	10	1247	35716	55402	1108	31100	47369	1061	29603	44829	1015	28128	42356	968	26672	39949
	15	1256	40995	63396	1117	35628	54112	1071	33896	51183	1024	32189	48332	978	30511	45562
	20	1266	48149	73991	1127	41721	63004	1080	39656	59547	1034	37629	56189	987	35638	52928
	25	1275	58683	89114	1136	50602	75605	1089	48026	71372	1043	45507	67269	997	43041	63493
	30	1284	75151	111847	1145	64280	94336	1099	60856	88888	1052	57525	83625	1006	54283	78541
1 3 0 0	35	1293	102141	191654	1154	86175	122850	1108	81242	115401	1061	76486	108247	1015	71898	101374
	36	1295	110003	208066	1156	92433	169414	1110	87035	122707	1063	81842	114998	1017	76847	107607
	-10	1197	23260	36267	1058	20281	31075	1011	19306	29426	965	18341	27818	919	17386	26251
	-5	1204	24734	38757	1065	21565	33193	1018	20530	31427	972	19506	29706	926	18492	28029
	0	1210	26550	41775	1071	23142	35754	1025	22031	33846	978	20930	31984	932	19843	30172
	5	1218	28752	45366	1078	25050	38800	1032	23846	36721	986	22654	34695	939	21476	32721
	10	1227	31598	49914	1088	27516	42660	1041	26189	40364	995	24879	38129	949	23586	35954
	15	1236	35825	56539	1097	31155	48258	1051	29642	45641	1004	28149	43093	958	26678	40616
	20	1246	41391	65104	1106	35918	55463	1060	34152	52424	1014	32415	49470	967	30704	46597
1 2 5 0 0	25	1255	49267	76910	1116	42607	65344	1069	40470	61708	1023	38373	58179	976	36314	54753
	30	1264	60866	93748	1125	52348	79321	1078	49638	74809	1032	46990	70438	985	44400	66206
	35	1273	78238	117826	1134	66708	99076	1087	63086	93256	1041	59567	87639	994	56147	82219
	36	1275	82948	124166	1135	70553	104228	1089	66673	98053	1043	62910	92099	996	59258	86360
	-10	1183	21050	33233	1043	18344	28464	997	17458	26950	951	16580	25473	904	15709	24033
	-5	1189	22298	35402	1050	19434	30310	1004	18498	28695	957	17569	27118	911	16649	25582
	0	1195	23824	38012	1056	20761	32525	1010	19761	30786	963	18769	29089	917	17788	27436
	5	1201	25682	41146	1062	22372	35180	1015	21291	33289	969	20222	31446	923	19165	29653
	10	1207	28104	45170	1068	24465	38581	1021	23278	36494	975	22106	34462	928	20947	32484
1 2 0 0	15	1216	31537	50733	1077	27427	43284	1030	26091	40928	984	24773	38636	938	23472	36406
	20	1225	35949	57778	1086	31218	49221	1039	29685	46520	993	28175	43893	947	26686	41339
	25	1234	42001	67227	1095	36384	57151	1048	34573	53977	1002	32792	50894	956	31040	47899
	30	1243	50516	80182	1104	43592	67956	1057	41373	64118	1011	39198	60397	964	37063	56786
	35	1252	62485	97697	1112	53608	82447	1066	50790	77686	1020	48038	73078	973	45348	68619
	36	1254	65576	102113	1114	56173	86078	1068	53195	81078	1021	50288	76241	975	47453	71566
	-10	1168	19088	30501	1029	16624	26113	982	15815	24719	936	15013	23360	889	14217	22034
	-5	1174	20153	32403	1035	17554	27730	989	16703	26248	942	15858	24802	896	15021	23392
	0	1180	21444	34675	1041	18679	29660	994	17773	28068	948	16876	26517	902	15987	25096
1 2 0 0	5	1186	23002	37381	1046	20030	31950	1000	19059	30230	954	18097	28553	907	17143	26918
	10	1191	25020	40843	1051	21775	34876	1005	20716	32986	959	19668	31145	912	18630	29351
	15	1195	27920	45737	1056	24272	38996	1010	23084	36864	963	21909	34787	917	20748	32767
	20	1204	31473	51615	1065	27333	43954	1018	25988	41534	972	24660	39179	926	23349	36888
	25	1213	36223	59325	1074	31404	50436	1027	29844	47632	981	28306	44906	934	26790	42256
	30	1222	42670	69575	1082	36891	59009	1036	35031	55587	989	33200	52459	943	31400	49327
	35	1230	51314	82874	1091	44189	70072	1045	41910	66060	998	39674	62169	952	37483	58399
	36	1232	53470	86126	1093	45998	72765	1046	43610	68580	1000	41272	64526	953	38980	60597
	1	-10	1153	17337	28028	1013	15084	23982	967	14345	22699	921	13611	21446	874	12881
1 5 0 0	-5	1159	18250	29703	1020	15883	25407	973	15106	24043	927	14336	22714	880	13571	21418
	0	1165	19349	31691	1025	16841	27094	979	16019	25636	933	15204	24215	886	14395	22829
	5	1170	20664	34043	1031	17985	29087	984	17106	27514	938	16236	25983	891	15373	24490
	10	1175	22350	37025	1035	19444	31605	989	18493	29888	943	17552	28216	896	16618	26585
	15	1179	24745	41202	1039	21508	35121	993	20451	33196	947	19405	31322	900	18369	29497
	20	1183	27729	46349	1043	24070	39443	997	22879	37260	950	21700	35134	904	20536	33068
	25	1191	31521	52738	1052	27330	44819	1005	25968	42318	959	24624	39887	913	23298	37524
	30	1200	36520	61024	1060	31602	51762	1014	30012	48846	968	28445	46011	921	26900	43257
	35	1208	42985	71445	1069	37095	60460	1022	35198	57007	976	33334	53657	930	31502	50407
1 1 0 0	36	1210	44556	73936	1070	38421	62529	1024	36450	58949	978	34512	55474	931	32608	52104
	-10	1155	15661	25453	1016	13643	21819	969	12979	20665	923	12320	19539	876	11664	18439
	-5	1148	16518	27165	1008	14368	23235	962	13663	21989	916	12962	20773	869	12266	19588
	0	1148	17492	29011	1009	15210	24788	963	14461	23449	916	13717	22142	870	12979	20870
	5	1153	18610	31067	1014	16182	26528	968	15386	25090	921	14595	23687	875	13812	22321
	10	1158	20030	33654	1019	17413	28713	972	16555	27148	926	15704	25622	879	14861	24137
	15	1162	22021	37238	1022	19129	31728	976	18184	29985	929	17246	28285	883	16318	26632
	20	1165	24463	41598	1026	21231	35391	979	20174	33427	933	19130	31516	887	18096	29657
	25	1168	27626	47160	1029	23939	40048	983	22739	37802	936	21551	35616	890	20378	33492
1 0 0	30	1177	31579	53978	1037	27328	45767	991	25948	43178	945	24587	40663	898	23241	38216
	35	1185	36548	62343	1046	31568	52762	999	29956	49745	953	28370	46817	906	26805	43973
	36	1186	37730	64308	1047	32571	54398	1001	30905	51282	954	29263	48255	908	27647	45318

 Figure 4-27 (Sheet 20 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15°**
ANTI - ICE SYSTEMS OFF **10,000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD			FIRST SECOND THIRD		
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-30	1285	41005	57736	1145	35748	49586	1099	34051	47007	1052	32378	44492	1006	30732	42044
	-25	1296	44213	62278	1157	38526	53462	1110	36693	50674	1064	34890	47960	1018	33117	45318
	-20	1308	47989	67566	1168	41782	57961	1122	39786	54928	1075	37825	51977	1029	35899	49106
	-15	1319	52531	73850	1180	45681	63291	1133	43484	59962	1087	41330	56727	1040	39215	53580
	-10	1330	58311	81729	1191	50611	69942	1144	48151	66234	1098	45743	62634	1052	43384	59138
	-5	1341	65539	91418	1202	56732	78077	1156	53934	73895	1109	51198	69836	1063	48526	65903
	0	1352	75654	104581	1213	65216	89048	1167	61921	84198	1120	58711	79503	1074	55585	74960
	5	1363	89538	122181	1224	76717	103571	1177	72706	97795	1131	68818	92222	1085	65046	86844
	10	1374	117517	182429	1235	99359	131064	1188	93784	123376	1142	88427	116004	1095	83271	108928
	11	1376	126046	195618	1237	106130	161624	1190	100050	151367	1144	94222	122869	1098	88629	115274
	13				1241	122883	187093	1195	115482	174731	1148	108431	163016	1102	101707	151911
1 6 0 0	-30	1274	38305	54449	1135	33409	46767	1089	31824	44332	1042	30262	41959	996	28723	39648
	-25	1286	41145	58543	1147	35875	50265	1100	34172	47644	1054	32496	45092	1007	30844	42605
	-20	1297	44458	63272	1158	38740	54295	1112	36898	51459	1065	35085	48696	1019	33302	46007
	-15	1309	48405	68843	1169	42139	59030	1123	40126	55934	1076	38147	52920	1030	36204	49990
	-10	1320	53362	75746	1180	46386	64874	1134	44151	61449	1088	41960	58121	1041	39809	54885
	-5	1331	59464	84115	1191	51582	71928	1145	49068	68099	1099	46606	64380	1052	44195	60770
	0	1342	67835	95273	1202	58650	81273	1156	55736	76889	1110	52891	72640	1063	50112	68520
	5	1352	79008	109812	1213	67989	93356	1167	64518	88226	1120	61141	83264	1074	57856	78467
	10	1363	100468	136640	1224	85591	115301	1177	80971	108714	1131	76509	102374	1085	72195	96269
	13	1369	121990	193204	1230	102847	159630	1184	96990	128024	1137	91367	120279	1091	85966	112855
	15				1234	118827	184716	1188	111725	172510	1142	104950	160939	1095	98479	149963
1 5 5 0 0	-25	1269	36687	53052	1130	32007	45551	1083	30490	43174	1037	28995	40857	990	27520	38599
	-20	1280	39386	57026	1141	34352	48946	1094	32724	46389	1048	31120	43897	1002	29540	41471
	-15	1291	42553	61645	1152	37095	52885	1105	35333	50115	1059	33600	47418	1013	31893	44792
	-10	1302	46460	67277	1163	40462	57670	1116	38531	54636	1070	36633	51685	1024	34768	48814
	-5	1313	51166	73975	1174	44499	63342	1127	42359	59990	1081	40260	56733	1034	38198	53566
	0	1324	57449	82679	1184	49850	70676	1138	47423	66904	1092	45046	63240	1045	42716	59683
	5	1334	65532	93648	1195	56684	79869	1149	53873	75552	1102	51126	71365	1056	48442	67307
	10	1345	80154	112776	1206	68873	95717	1159	65324	90406	1113	61873	85271	1066	58516	80307
	15	1355	105660	144741	1216	89685	121743	1169	84744	114665	1123	79981	107862	1077	75383	101320
	17	1359	121113	199191	1220	102027	164092	1174	96187	128537	1127	90580	120709	1081	85195	113207
	20				1180	121826	194026	1133	114148	180476	1087	106849	167683			
1 5 0 0	-25	1251	32886	48304	1112	28696	41462	1066	27336	39294	1019	25991	37177	973	24665	35116
	-20	1262	35116	51687	1123	30641	44358	1077	29191	42037	1030	27758	39773	984	26346	37568
	-15	1273	37702	55578	1134	32891	47684	1088	31333	45185	1041	29797	42749	995	28284	40379
	-10	1284	40841	60256	1145	35609	51669	1098	33918	48953	1052	32254	46309	1006	30615	43735
	-5	1295	44558	65736	1156	38816	56325	1109	36965	53353	1063	35145	50461	1016	33354	47647
	0	1305	49413	72714	1166	42980	62231	1120	40914	58927	1073	38884	55714	1027	36892	52592
	5	1316	55488	81290	1177	48160	69460	1130	45815	65739	1084	43518	62126	1037	41265	58617
	10	1326	65994	95634	1187	57018	81443	1140	54166	76998	1094	51383	72693	1048	48663	68520
	15	1336	82983	117992	1197	71127	99902	1151	67407	94281	1104	63792	88850	1058	60280	83606
	20	1346	112774	191095	1207	95264	130107	1161	89879	122379	1114	84697	114963	1068	79709	107846
	21	1348	121728	206205	1209	102372	169338	1163	96455	158252	1116	90777	122346	1070	85326	114665
1 4 5 0 0	-25	1234	29606	44148	1094	25829	37876	1048	24600	35886	1002	23386	33946	955	22184	32053
	-20	1244	31471	47060	1105	27462	40372	1059	26159	38252	1012	24871	36184	966	23600	34170
	-15	1255	33614	50382	1116	29332	43215	1070	27942	40944	1023	26570	38731	977	25216	36575
	-10	1266	36177	54326	1127	31561	46582	1080	30064	44129	1034	28589	41741	987	27133	39414
	-5	1276	39168	58887	1137	34153	50466	1091	32531	47803	1044	30933	45210	998	29358	42686
	0	1287	43009	64603	1147	37464	55318	1101	35676	52386	1055	33917	49534	1008	32185	46759
	5	1297	47707	71489	1158	41497	61147	1111	39500	57886	1065	37539	54716	1018	35610	51634
	10	1307	55553	82642	1168	48168	70516	1121	45805	66704	1075	43492	63005	1029	41224	59414
	15	1317	67560	99181	1178	58261	84291	1132	55313	79636	1085	52434	75125	1039	49625	70759
	20	1327	86807	124618	1188	74171	105205	1141	70217	99186	1095	66382	93378	1049	62662	87777
	25	1337	122592	214335	1198	102897	175384	1151	96883	163702	1105	91118	152611	1058	85584	116371
1 4 0 0	-15	1237	30119	45869	1097	26279	39325	1051	25029	37250	1005	23795	35228	958	22574	33256
	-10	1247	32236	49230	1108	28127	42199	1061	26791	39970	1015	25473	37799	969	24171	35684
	-5	1258	34681	53081	1118	30253	45484	1072	28817	43079	1025	27399	40735	979	26001	38454
	0	1268	37772	57840	1128	32929	49531	1082	31362	46904	1036	29818	44347	989	28294	41857
	5	1278	41485	63482	1139	36133	54320	1092	34405	51427	1046	32704	48612	999	31028	45872
	10	1288	47515	72388	1149	41292	61831	1102	39290	58503	1056	37325	55270	1009	35393	52128
	15	1298	56361	85110	1158	48793	72487	1112	46376	68525	1066	44008	64680	1019	41687	60949
	20	1307	69667	103589	1168	59940	87829	1122	56862	82909	1075	53859	78147	1029	50932	73540
	25	1317	91877	133040	1178	78192	111918	1131	73926	105387	1085	69798	99097	1039	65801	93039
	29	1325	123097	223434	1186	103125	182086	1139	97034	169726	1093	91197	158009	1046	85597	117906
	30	1327	133803	244098	1187	111487	197819	1141	104732	184078	1095	98279	171089	1048	92109	1588

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES FLAPS - 15° ANTI - ICE SYSTEMS OFF 10,000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 3 5 0 0	-10	1228	28864	44798	1089	25178	38377	1042	23977	36341	996	22791	34358	950	21618	32425
	-5	1238	30884	48083	1099	26941	41183	1053	25659	38998	1006	24391	36867	960	23139	34792
	0	1248	33408	52098	1109	29134	44604	1063	27746	42231	1016	26376	39920	970	25024	37671
	5	1258	36394	56795	1119	31720	48598	1073	30206	46006	1026	28712	43482	980	27240	41026
	10	1268	41132	64056	1129	35793	54735	1082	34068	51792	1036	32371	48931	990	30701	46149
	15	1278	47855	74127	1138	41531	63205	1092	39500	59767	1046	37504	56427	999	35543	53182
	20	1287	57497	88154	1148	49686	74924	1102	47194	70775	1055	44753	66751	1009	42364	62851
	25	1297	72442	109079	1158	62154	92227	1111	58905	86976	1065	55741	81899	1018	52658	76992
	30	1306	97293	142159	1167	82444	119132	1121	77838	112039	1074	73387	105214	1028	69085	98650
	33	1312	121138	231678	1173	101412	187962	1126	95392	174940	1080	89622	162615	1033	84084	117626
1 3 0 0	34	1314	131933	254619	1174	109839	205282	1128	103148	190695	1082	96756	176936	1035	90641	163949
	-15	1205	24341	38140	1066	21231	32678	1019	20214	30944	973	19208	29254	927	18212	27606
	-10	1212	25872	40745	1073	22566	34896	1027	21487	33041	980	20418	31231	934	19362	29470
	-5	1219	27615	43693	1080	24081	37401	1034	22930	35408	987	21790	33464	941	20664	31571
	0	1229	29716	47150	1089	25909	40346	1043	24671	38191	996	23446	36091	950	22236	34047
	5	1238	32151	51112	1099	28026	43720	1053	26686	41381	1006	25362	39102	960	24055	36883
	10	1248	35940	57128	1109	31295	48814	1062	29790	46186	1016	28306	43629	969	26841	41139
	15	1257	41174	65280	1118	35785	55687	1072	34045	52661	1025	32332	49718	979	30647	46859
	20	1267	48408	76274	1128	41945	64908	1081	39869	61333	1035	37832	57863	988	35830	54492
	25	1276	59024	91907	1137	50894	77925	1090	48302	73545	1044	45769	69304	998	43289	65193
1 2 5 0 0	30	1285	75252	114837	1146	64373	96812	1100	60947	91207	1053	57613	85793	1007	54369	80565
	34	1293	95337	141861	1153	80729	118737	1107	76195	111612	1061	71812	104758	1014	67575	98167
	-15	1190	21965	34867	1051	19151	29864	1005	18230	28276	958	17316	26726	912	16412	25217
	-10	1197	23255	37128	1058	20278	31790	1012	19304	30096	965	18339	28443	919	17384	26834
	-5	1204	24711	39669	1065	21546	33949	1019	20513	32137	972	19489	30368	926	18476	28646
	0	1211	26503	42732	1071	23102	36549	1025	21993	34590	979	20896	32682	932	19810	30822
	5	1218	28561	46211	1079	24888	39502	1032	23692	37378	986	22509	35309	939	21339	33294
	10	1227	31634	51261	1088	27548	43784	1042	26220	41419	995	24908	39115	949	23613	36874
	15	1237	35787	57976	1097	31123	49453	1051	29612	46762	1005	28123	44144	958	26653	41598
	20	1246	41357	66801	1107	35892	56875	1060	34128	53747	1014	32392	50707	967	30684	47755
1 2 0 0	25	1255	49200	78906	1116	42552	66998	1069	40419	63258	1023	38326	59628	977	36272	56107
	30	1264	60486	95749	1125	52034	80978	1078	49345	76359	1032	46717	71888	986	44147	67559
	34	1271	73414	114278	1132	62753	96209	1086	59393	90591	1039	56123	85165	993	52939	79925
	-15	1175	19869	31937	1036	17312	27342	990	16474	25883	943	15643	24461	897	14819	23074
	-10	1182	20963	33911	1043	18270	29024	997	17388	27473	950	16513	25960	904	15646	24486
	-5	1189	22189	36116	1050	19340	30899	1003	18407	29244	957	17484	27632	910	16568	26059
	0	1195	23684	38752	1056	20641	33137	1009	19645	31356	963	18660	29622	917	17685	27933
	5	1201	25404	41764	1062	22134	35691	1015	21066	33767	969	20009	31892	923	18964	30067
	10	1206	28004	46214	1067	24377	39447	1021	23196	37306	974	22027	35220	928	20872	33190
	15	1215	31348	51821	1076	27265	44186	1030	25938	41773	983	24627	39424	937	23333	37140
1 5 0 0	20	1224	35728	59041	1085	31029	50267	1039	29507	47499	992	28005	44806	946	26525	42190
	25	1233	41694	68665	1094	36123	58338	1048	34326	55087	1001	32558	51930	955	30819	48864
	30	1242	49898	81543	1103	43072	69079	1057	40884	65168	1010	38737	61375	964	36632	57698
	34	1249	58800	95054	1110	50540	80271	1064	47910	75650	1017	45338	71176	971	42822	66845
	-15	1160	18006	29294	1021	15676	25067	974	14910	23724	928	14152	22416	882	13399	21141
	-10	1167	18940	31028	1027	16493	26542	981	15691	25119	935	14896	23732	888	14105	22378
	-5	1173	19979	32952	1034	17402	28180	987	16557	26665	941	15720	25190	895	14890	23753
	0	1179	21236	35238	1040	18498	30121	993	17600	28497	947	16712	26917	901	15831	25376
	5	1185	22671	37831	1046	19745	32319	999	18787	30572	953	17840	28871	906	16900	27213
	10	1190	24815	41628	1050	21597	35523	1004	20547	33591	957	19506	31708	911	18477	29876
1 0 0	15	1194	27630	46552	1055	24020	39665	1008	22844	37488	962	21681	35369	915	20530	33306
	20	1202	31134	52553	1063	27039	44724	1017	25709	42252	970	24394	39846	924	23097	37509
	25	1211	35777	60364	1072	31020	51286	1026	29480	48425	979	27960	45643	933	26464	42942
	30	1220	41941	70506	1081	36271	59770	1034	34443	56393	988	32646	53116	941	30877	49935
	34	1227	48366	80783	1088	41706	68324	1041	39569	64416	995	37473	60627	948	35415	56954
	-15	1153	16283	26730	1014	14177	22886	967	13484	21664	921	12797	20474	874	12113	19312
	-10	1150	17142	28431	1011	14913	24306	965	14181	22998	918	13453	21720	872	12732	20477
	-5	1157	18029	30121	1017	15688	25742	971	14920	24354	925	14158	23001	878	13401	21681
	0	1162	19094	32115	1023	16617	27436	977	15806	25953	930	14999	24506	884	14200	23097
	5	1168	20300	34363	1029	17667	29342	982	16804	27750	936	15949	26200	889	15100	24689
1 0 0	10	1172	22080	37621	1033	19207	32091	987	18268	30341	940	17336	28634	894	16413	26974
	15	1176	24384	41793	1037	21193	35601	991	20151	33643	944	19119	31736	898	18098	29881
	20	1180	27308	47022	1041	23704	39988	994	22529	37765	948	21368	35604	901	20219	33501
	25	1188	31001	53492	1049	26877	45426	1002	25537	42881	956	24214	40407	909	22907	38002
	30	1196	35753	61665	1057	30942	52274	1011	29385	49317	964	27849	46444	918	26336	43654
	34	1203	40558	69732	1064	35030	59008	1018	33247	55637	971	31492	52365	925	29766	49192



Figure 4-27 (Sheet 22 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

SEA LEVEL

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
								10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 3 0 0	-25	1101	30401	39855	961	26044	33811	915	24632	31893	868	23237	30021	822	21862	28196
	-20	1110	30370	39960	971	26056	33941	925	24657	32030	878	23275	30165	832	21913	28348
	-15	1120	30332	40047	981	26061	34056	934	24674	32152	888	23306	30296	841	21955	28484
	-10	1129	30290	40125	990	26061	34161	944	24688	32267	897	23332	30418	851	21995	28615
	-5	1139	30234	40194	999	26047	34257	953	24688	32372	906	23345	30530	860	22021	28735
	0	1148	30157	40250	1009	26016	34342	962	24671	32465	916	23343	30633	869	22031	28845
	5	1157	30391	40743	1018	26247	34788	971	24900	32896	925	23572	31051	879	22260	29249
	10	1166	31789	42889	1027	27465	36609	980	26061	34615	934	24676	32671	888	23310	30775
	-25	1092	28766	37976	953	24639	32210	906	23299	30379	860	21976	28593	814	20670	26850
	-20	1102	28736	38077	962	24649	32334	916	23322	30510	870	22011	28730	823	20716	26993
1 6 0 0	-15	1111	28699	38161	972	24653	32444	925	23338	30627	879	22040	28855	833	20758	27126
	-10	1121	28661	38239	981	24654	32547	935	23352	30739	888	22065	28973	842	20795	27251
	-5	1130	28608	38308	991	24642	32641	944	23352	30840	898	22079	29083	851	20820	27367
	0	1139	28538	38366	1000	24614	32726	953	23338	30933	907	22078	29183	860	20832	27475
	5	1148	28750	38826	1009	24825	33143	962	23548	31336	916	22287	29573	870	21042	27853
	10	1157	30020	40808	1018	25934	34826	971	24605	32925	925	23294	31072	879	22000	29264
	-25	1078	26280	35092	939	22500	29751	893	21270	28054	846	20054	26398	800	18853	24782
	-20	1088	26252	35188	948	22508	29867	902	21289	28175	856	20086	26526	809	18895	24915
	-15	1097	26218	35268	958	22511	29969	911	21304	28285	865	20111	26642	819	18933	25039
	-10	1106	26181	35339	967	22511	30065	921	21316	28389	874	20134	26751	828	18967	25155
1 5 0 0	-5	1116	26136	35409	976	22502	30157	930	21319	28488	883	20148	26856	837	18992	25266
	0	1124	26076	35473	985	22480	30242	939	21309	28579	892	20150	26955	846	19005	25370
	5	1133	26260	35889	994	22664	30620	948	21493	28945	901	20334	27308	855	19189	25712
	10	1142	27349	37638	1003	23617	32104	956	22402	30346	910	21201	28630	864	20015	26957
	-25	1067	24007	32391	928	20549	27460	882	19422	25893	835	18307	24363	789	17205	22871
	-20	1077	23980	32480	937	20555	27567	891	19439	26005	845	18335	24481	798	17242	22993
	-15	1086	23949	32555	947	20559	27664	900	19453	26108	854	18359	24590	807	17276	23107
	-10	1095	23916	32625	956	20559	27754	909	19464	26205	863	18381	24693	817	17309	23216
	-5	1104	23875	32691	965	20552	27841	918	19467	26297	872	18394	24791	826	17333	23321
	0	1113	23823	32754	974	20534	27923	927	19460	26385	881	18398	24884	834	17346	23419
1 4 5 0 0	5	1122	23980	33127	982	20692	28260	936	19620	26713	890	18558	25201	843	17507	23726
	10	1130	24913	34665	991	21512	29568	945	20403	27948	898	19305	26366	852	18219	24822
	-25	1056	21978	29958	917	18806	25397	871	17770	23946	824	16744	22529	778	15729	21147
	-20	1065	21952	30040	926	18810	25494	880	17785	24049	833	16768	22636	787	15763	21259
	-15	1075	21925	30113	935	18813	25584	889	17797	24144	842	16790	22737	796	15794	21365
	-10	1084	21895	30179	944	18814	25669	898	17808	24235	852	16812	22835	805	15824	21466
	-5	1093	21859	30243	953	18808	25751	907	17811	24321	860	16824	22926	814	15847	21564
	0	1101	21812	30304	962	18793	25829	916	17806	24405	869	16829	23015	823	15861	21657
	5	1110	21947	30639	971	18931	26133	924	17945	24699	878	16969	23300	831	16002	21933
	10	1119	22753	32002	979	19640	27291	933	18623	25793	886	17616	24331	840	16620	22905
1 4 0 0	-25	1045	20158	27755	906	17238	23524	859	16282	22177	813	15336	20863	767	14400	19582
	-20	1054	20133	27831	915	17241	23614	868	16295	22273	822	15359	20964	776	14431	19686
	-15	1063	20107	27898	924	17244	23698	877	16307	22362	831	15379	21057	785	14460	19784
	-10	1072	20080	27961	933	17245	23778	886	16317	22446	840	15398	21147	794	14488	19879
	-5	1081	20048	28023	942	17241	23856	895	16321	22528	849	15411	21233	802	14508	19968
	0	1089	20006	28081	950	17227	23928	904	16318	22607	857	15416	21316	811	14523	20056
	5	1098	20123	28384	959	17348	24203	912	16439	22873	866	15539	21574	820	14648	20307
	10	1107	20821	29595	967	17964	25233	921	17029	23846	874	16103	22492	828	15185	21169



Figure 4-28 (Sheet 1 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-25	1034	18514	25746	894	15819	21815	848	14937	20565	802	14063	19345	755	13195	18152
3	-20	1043	18491	25817	903	15822	21899	857	14949	20654	810	14082	19436	764	13224	18249
5	-15	1052	18467	25880	912	15824	21977	866	14959	20735	819	14101	19523	773	13251	18340
0	-10	1060	18442	25939	921	15826	22052	875	14969	20815	828	14119	19607	782	13277	18428
0	-5	1069	18413	25998	930	15822	22124	883	14973	20891	837	14132	19688	791	13298	18513
	0	1078	18376	26055	938	15811	22194	892	14971	20966	845	14137	19765	799	13311	18594
	5	1086	18477	26328	947	15917	22443	900	15078	21206	854	14246	19999	807	13421	18820
	10	1094	19084	27408	955	16454	23361	909	15593	22075	862	14739	20818	816	13892	19592
1	-25	1022	17021	23905	883	14531	20250	836	13713	19086	790	12904	17952	744	12101	16844
3	-20	1031	16999	23970	892	14533	20327	845	13724	19168	799	12922	18036	752	12126	16931
0	-15	1040	16977	24029	901	14535	20399	854	13734	19244	808	12940	18117	761	12151	17016
0	-10	1049	16956	24086	909	14536	20468	863	13744	19319	816	12956	18194	770	12176	17098
	-5	1057	16928	24140	918	14534	20537	871	13747	19389	825	12968	18270	779	12195	17177
	0	1065	16895	24195	926	14524	20602	880	13746	19459	833	12974	18343	787	12208	17253
	5	1074	16983	24442	934	14617	20827	888	13841	19678	842	13071	18555	795	12306	17458
	10	1082	17514	25410	943	15088	21651	896	14292	20455	850	13503	19288	804	12720	18149
1	-25	1019	15605	22074	880	13326	18722	833	12577	17655	787	11835	16614	740	11098	15597
2	-20	1028	15584	22132	888	13327	18791	842	12587	17729	796	11852	16691	749	11211	15677
5	-15	1037	15563	22183	897	13329	18856	851	12596	17797	805	11868	16763	758	11145	15753
0	-10	1046	15542	22231	906	13330	18917	860	12604	17862	813	11882	16831	767	11167	15826
	-5	1054	15518	22283	915	13328	18980	868	12608	17928	822	11894	16901	775	11184	15897
	0	1062	15492	22341	922	13321	19044	876	12608	17995	830	11901	16971	783	11197	15969
	5	1070	15571	22570	930	13404	19251	884	12693	18196	837	11985	17163	791	11284	16156
	10	1078	16035	23435	938	13817	19987	892	13089	18891	845	12365	17819	799	11648	16774
1	-25	1027	14282	20264	888	12222	17246	841	11545	16285	795	10873	15347	748	10204	14429
2	-20	1036	14264	20316	897	12225	17308	850	11553	16349	804	10888	15414	757	10226	14500
0	-15	1045	14245	20360	906	12226	17364	859	11562	16409	813	10903	15477	766	10247	14566
0	-10	1054	14227	20402	915	12228	17418	868	11570	16466	822	10917	15538	775	10268	14630
	-5	1062	14205	20446	923	12225	17471	877	11574	16524	830	10926	15597	784	10284	14693
	0	1070	14180	20495	931	12218	17527	885	11573	16582	838	10931	15657	792	10295	14756
	5	1078	14247	20696	939	12290	17709	892	11646	16757	846	11006	15828	800	10371	14920
	10	1086	14652	21459	947	12652	18360	900	11993	17372	854	11340	16409	808	10691	15468
1	-25	1036	13116	18649	896	11247	15926	850	10632	15059	804	10021	14212	757	9413	13383
1	-20	1045	13100	18693	905	11249	15980	859	10640	15115	813	10035	14271	766	9433	13445
5	-15	1054	13083	18731	914	11250	16027	868	10648	15167	822	10049	14326	775	9452	13503
0	-10	1063	13066	18765	924	11253	16075	877	10655	15216	831	10062	14378	784	9471	13558
	-5	1071	13046	18802	932	11250	16120	886	10659	15266	839	10070	14429	793	9486	13613
	0	1079	13022	18844	940	11243	16168	894	10657	15315	847	10074	14481	801	9495	13667
	5	1087	13081	19021	948	11306	16328	902	10722	15471	855	10140	14631	809	9563	13812
	10	1095	13437	19696	956	11625	16905	910	11029	16017	863	10436	15148	817	9847	14300
1	-25	1045	12077	17194	905	10376	14736	859	9816	13953	813	9260	13189	766	8705	12439
1	-20	1054	12063	17232	914	10378	14782	868	9824	14002	822	9272	13239	775	8723	12492
0	-15	1063	12048	17263	924	10381	14825	877	9831	14046	831	9285	13286	784	8741	12543
0	-10	1072	12033	17292	933	10382	14863	886	9838	14088	840	9297	13331	794	8760	12592
	-5	1081	12015	17323	942	10381	14903	895	9841	14130	849	9306	13376	802	8772	12637
	0	1089	11993	17357	950	10373	14942	903	9839	14172	857	9308	13419	810	8779	12682
	5	1097	12043	17512	958	10429	15083	911	9896	14308	865	9367	13551	818	8839	12810
	10	1105	12359	18113	966	10713	15598	919	10170	14796	873	9631	14013	826	9093	13240

Figure 4-28 (Sheet 2 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15⁰**
ANTI - ICE SYSTEMS ON **1000 FEET****CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 3 0 0	-25	1118	29720	39281	979	25539	33410	932	24180	31544	886	22840	29725	840	21518	27951
	-20	1128	29702	39409	989	25560	33558	942	24214	31699	896	22886	29885	849	21574	28114
	-15	1138	29659	39487	998	25557	33662	952	24225	31812	906	22910	30006	859	21610	28242
	-10	1147	29615	39563	1008	25555	33766	962	24236	31924	915	22933	30126	869	21646	28370
	-5	1157	29610	39736	1018	25584	33947	971	24275	32106	925	22983	30311	878	21705	28556
	0	1166	29611	39927	1027	25617	34142	981	24319	32304	934	23036	30508	888	21770	28757
	5	1176	31009	41990	1036	26836	35899	990	25481	33965	943	24143	32077	897	22822	30236
	10	1185	33580	45651	1046	29052	38992	999	27583	36879	953	26136	34820	906	24707	32811
	-25	1110	28145	37461	970	24179	31853	924	22890	30071	877	21616	28331	831	20359	26635
	-20	1119	28126	37583	980	24198	31994	934	22921	30218	887	21658	28483	841	20412	26792
1 6 0 0	-15	1129	28086	37660	990	24197	32096	943	22932	30328	897	21682	28601	850	20447	26916
	-10	1138	28046	37737	999	24195	32197	953	22943	30437	906	21705	28718	860	20482	27040
	-5	1148	28040	37902	1009	24222	32370	962	22979	30611	916	21751	28894	869	20537	27217
	0	1157	28040	38085	1018	24252	32556	972	23020	30799	925	21801	29083	879	20598	27409
	5	1166	29311	39990	1027	25364	34182	981	24080	32336	934	22812	30535	888	21559	28777
	10	1176	31643	43357	1036	27374	37025	990	25989	35016	944	24622	33057	897	23272	31145
	-25	1096	25724	34623	957	22092	29431	911	20909	27780	864	19739	26169	818	18583	24596
	-20	1106	25707	34739	967	22108	29562	920	20935	27916	874	19777	26310	827	18630	24741
	-15	1115	25670	34812	976	22107	29658	930	20947	28020	883	19798	26419	837	18664	24858
	-10	1125	25635	34887	986	22108	29756	939	20957	28123	893	19821	26530	846	18696	24974
1 5 5 0 0	-5	1134	25628	35040	995	22130	29915	949	20990	28285	902	19862	26693	856	18747	25139
	0	1143	25626	35210	1004	22157	30088	958	21026	28459	911	19907	26868	865	18800	25314
	5	1152	26719	36889	1013	23114	31520	967	21940	29813	920	20778	28146	874	19631	26522
	10	1161	28706	39828	1022	24833	34004	976	23573	32155	929	22328	30351	883	21098	28591
	-25	1085	23527	31995	946	20200	27195	900	19115	25669	853	18040	24178	807	16978	22724
	-20	1095	23509	32101	955	20212	27315	909	19137	25793	863	18073	24307	816	17020	22856
	-15	1104	23476	32172	965	20214	27408	918	19148	25891	872	18094	24410	826	17052	22966
	-10	1113	23445	32244	974	20214	27498	928	19159	25988	881	18115	24514	835	17082	23074
	-5	1123	23438	32386	983	20233	27645	937	19188	26137	891	18153	24665	844	17127	23226
	0	1132	23435	32543	992	20257	27805	946	19219	26297	900	18193	24826	853	17175	23387
1 4 5 0 0	5	1141	24375	34022	1001	21083	29067	955	20009	27492	909	18946	25954	862	17894	24452
	10	1150	26073	36590	1010	22555	31239	964	21409	29540	917	20275	27881	871	19154	26263
	-25	1074	21562	29623	935	18505	25175	888	17505	23759	842	16517	22379	795	15536	21029
	-20	1083	21543	29720	944	18515	25285	898	17526	23875	851	16545	22496	805	15575	21152
	-15	1093	21515	29789	953	18516	25371	907	17537	23967	860	16565	22593	814	15604	21254
	-10	1102	21487	29857	963	18518	25458	916	17547	24058	870	16586	22691	823	15633	21355
	-5	1111	21479	29988	972	18536	25595	925	17572	24195	879	16619	22829	832	15674	21495
	0	1120	21475	30133	981	18556	25741	934	17600	24342	888	16655	22977	841	15717	21643
	5	1129	22288	31443	989	19271	26859	943	18286	25401	897	17310	23978	850	16342	22587
	10	1137	23748	33700	998	20541	28771	952	19494	27204	905	18457	25674	859	17431	24182
1 4 0 0	-25	1062	19793	27467	923	16977	23339	877	16055	22024	830	15141	20741	784	14237	19489
	-20	1072	19776	27558	932	16985	23440	886	16073	22131	840	15168	20851	793	14271	19601
	-15	1081	19750	27623	942	16988	23522	895	16083	22216	849	15187	20942	802	14298	19696
	-10	1090	19725	27689	951	16990	23603	904	16093	22302	858	15206	21032	812	14326	19792
	-5	1099	19717	27810	960	17005	23729	913	16116	22429	867	15236	21160	820	14363	19920
	0	1108	19713	27945	969	17023	23864	922	16141	22564	876	15268	21296	829	14402	20057
	5	1117	20419	29109	977	17646	24858	931	16739	23507	884	15839	22186	838	14948	20897
	10	1125	21682	31104	986	18747	26549	940	17787	25101	893	16835	23686	847	15894	22308



Figure 4-28 (Sheet 3 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15⁰

1000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-25	1051	18195	25501	912	15594	21661	865	14741	20439	819	13896	19246	772	13057	18080
3	-20	1060	18177	25584	921	15601	21755	874	14756	20536	828	13919	19346	781	13088	18183
5	-15	1069	18154	25645	930	15603	21831	883	14766	20616	837	13937	19431	791	13115	18273
0	-10	1078	18132	25708	939	15605	21907	892	14776	20696	846	13955	19515	800	13141	18362
0	-5	1087	18124	25820	948	15619	22023	901	14797	20814	855	13983	19634	808	13174	18480
0	0	1096	18119	25944	956	15633	22146	910	14819	20939	864	14012	19759	817	13209	18606
	5	1104	18735	26984	965	16180	23036	919	15343	21781	872	14512	20554	826	13689	19357
	10	1113	19833	28756	974	17138	24537	927	16255	23195	881	15380	21886	834	14512	20607
1	-25	1039	16741	23694	900	14334	20120	853	13543	18981	807	12760	17871	761	11983	16787
3	-20	1048	16724	23771	909	14340	20206	862	13557	19071	816	12781	17963	770	12012	16883
0	-15	1057	16703	23829	918	14342	20277	871	13567	19146	825	12799	18043	779	12036	16965
0	-10	1066	16683	23888	927	14345	20349	880	13577	19222	834	12816	18122	787	12060	17047
0	-5	1075	16675	23992	935	14356	20455	889	13596	19330	843	12841	18231	796	12091	17157
0	0	1083	16669	24106	944	14370	20570	898	13616	19445	851	12866	18345	805	12123	17273
	5	1092	17209	25037	953	14850	21367	906	14075	20199	860	13307	19058	813	12544	17944
	10	1100	18167	26616	961	15686	22703	915	14873	21460	868	14066	20245	822	13266	19060
1	-25	1040	15337	21831	900	13143	18572	854	12423	17535	808	11708	16523	761	10998	15534
2	-20	1049	15322	21901	909	13149	18651	863	12436	17617	817	11728	16607	770	11024	15620
5	-15	1058	15302	21951	919	13152	18714	872	12444	17682	826	11743	16676	779	11046	15693
0	-10	1067	15283	22001	928	13153	18775	881	12453	17748	835	11759	16746	788	11068	15765
0	-5	1075	15275	22095	936	13164	18873	890	12470	17846	843	11780	16843	797	11097	15865
0	0	1084	15271	22201	945	13177	18978	898	12488	17951	852	11805	16950	805	11125	15969
	5	1092	15743	23030	953	13597	19688	906	12891	18623	860	12191	17584	814	11496	16569
	10	1100	16578	24430	961	14327	20873	914	13588	19741	868	12855	18637	822	12127	17559
1	-25	1048	14054	20053	909	12069	17118	862	11416	16182	816	10768	15269	770	10124	14377
2	-20	1057	14040	20115	918	12074	17186	871	11427	16253	825	10785	15342	779	10147	14452
0	-15	1066	14022	20157	927	12076	17240	881	11436	16311	834	10799	15402	788	10168	14516
0	-10	1076	14006	20201	936	12078	17294	890	11444	16368	843	10813	15463	797	10188	14580
0	-5	1084	13998	20283	945	12087	17379	898	11458	16454	852	10834	15550	806	10213	14667
0	0	1093	13994	20376	953	12098	17471	907	11474	16546	861	10855	15643	814	10238	14758
	5	1101	14406	21107	962	12467	18099	915	11829	17141	869	11195	16205	822	10565	15290
	10	1109	15134	22339	970	13107	19146	923	12440	18129	877	11778	17136	831	11120	16166
1	-25	1057	12920	18462	918	11118	15814	871	10524	14969	825	9934	14144	779	9348	13338
1	-20	1066	12907	18514	927	11122	15873	881	10535	15032	834	9950	14208	788	9369	13404
5	-15	1076	12892	18551	936	11124	15919	890	10542	15081	843	9963	14260	797	9388	13459
0	-10	1085	12876	18586	946	11126	15965	899	10549	15129	853	9976	14312	806	9406	13514
0	-5	1094	12870	18659	954	11134	16039	908	10562	15204	861	9994	14388	815	9429	13591
0	0	1102	12864	18738	963	11143	16119	916	10576	15285	870	10012	14468	824	9452	13671
	5	1111	13229	19388	971	11470	16678	925	10891	15814	878	10315	14970	832	9743	14145
	10	1119	13869	20478	979	12035	17607	933	11431	16692	887	10832	15799	840	10235	14925
1	-25	1067	11909	17027	927	10266	14635	881	9726	13873	834	9187	13127	788	8652	12398
1	-20	1076	11897	17072	936	10271	14687	890	9735	13926	844	9202	13183	797	8671	12455
0	-15	1085	11883	17102	946	10273	14726	899	9742	13968	853	9214	13227	807	8689	12503
0	-10	1094	11868	17130	955	10274	14764	909	9749	14010	862	9226	13272	816	8706	12550
0	-5	1103	11862	17192	964	10282	14829	918	9761	14075	871	9242	13337	825	8726	12616
0	0	1112	11857	17261	973	10290	14898	926	9773	14145	880	9259	13408	833	8747	12687
	5	1120	12181	17840	981	10582	15397	935	10055	14618	888	9529	13855	842	9008	13111
	10	1129	12750	18812	989	11084	16225	943	10536	15401	897	9991	14596	850	9447	13808



Figure 4-28 (Sheet 4 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15⁰

2000 FEET

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-25	1136	29346	39070	997	25288	33308	950	23969	31477	904	22667	29690	858	21381	27946
6	-20	1146	29344	39216	1007	25321	33470	960	24013	31643	914	22722	29861	868	21447	28122
3	-15	1156	29306	39310	1017	25323	33588	970	24028	31769	924	22749	29993	877	21485	28260
0	-10	1166	29337	39508	1026	25382	33791	980	24097	31975	934	22827	30201	887	21571	28468
0	-5	1175	29590	40051	1036	25630	34281	990	24343	32447	943	23071	30656	897	21814	28908
0	0	1185	29889	40662	1046	25917	34827	999	24625	32972	953	23349	31162	907	22089	29395
	5	1195	32998	44985	1055	28593	38481	1009	27165	36418	962	25754	34403	916	24364	32441
	10	1204	36840	50306	1065	31888	42965	1018	30286	40640	972	28708	38374	926	27153	36166
1	-25	1127	27804	37278	988	23953	31772	942	22701	30022	895	21462	28312	849	20240	26645
6	-20	1137	27801	37419	998	23984	31927	952	22742	30181	905	21514	28476	859	20301	26812
0	-15	1147	27766	37511	1008	23986	32041	961	22756	30302	915	21540	28603	868	20338	26945
0	-10	1157	27794	37701	1017	24041	32235	971	22820	30498	925	21613	28801	878	20419	27144
0	-5	1166	28023	38208	1027	24268	32694	981	23045	30940	934	21836	29227	888	20643	27557
	0	1176	28294	38778	1037	24529	33204	990	23303	31431	944	22092	29701	897	20894	28012
	5	1185	31117	42756	1046	26963	36568	1000	25614	34603	953	24281	32686	907	22966	30816
	10	1195	34578	47616	1055	29934	40664	1009	28430	38461	963	26948	36315	916	25484	34221
1	-25	1115	25413	34447	976	21888	29353	929	20738	27732	883	19603	26151	836	18478	24605
5	-20	1125	25409	34578	985	21914	29496	939	20776	27880	893	19649	26302	846	18535	24761
5	-15	1134	25377	34666	995	21917	29604	949	20790	27995	902	19673	26421	856	18570	24886
0	-10	1144	25400	34840	1005	21966	29783	958	20845	28173	912	19738	26602	865	18641	25067
0	-5	1153	25594	35292	1014	22160	30192	968	21040	28569	921	19931	26983	875	18836	25437
	0	1163	25825	35799	1024	22384	30646	977	21261	29005	931	20152	27406	884	19053	25842
	5	1172	28235	39268	1033	24467	33582	986	23240	31775	940	22028	30012	894	20830	28292
	10	1181	31151	43458	1042	26978	37118	996	25623	35107	949	24284	33145	903	22963	31233
1	-25	1104	23258	31855	964	20026	27141	918	18972	25642	871	17927	24176	825	16894	22747
5	-20	1113	23253	31976	974	20050	27274	927	19004	25777	881	17969	24316	835	16945	22890
0	-15	1123	23225	32060	983	20053	27375	937	19018	25885	891	17993	24429	844	16977	23006
0	-10	1132	23243	32219	993	20095	27538	947	19068	26050	900	18049	24593	854	17042	23173
	-5	1142	23410	32625	1002	20263	27905	956	19236	26404	910	18219	24937	863	17211	23505
	0	1151	23607	33077	1012	20457	28312	965	19428	26795	919	18410	25315	872	17401	23868
	5	1160	25674	36115	1021	22248	30885	974	21129	29220	928	20024	27598	882	18931	26015
	10	1169	28145	39745	1030	24381	33951	984	23156	32112	937	21945	30317	891	20748	28567
1	-25	1092	21329	29512	953	18358	25141	906	17385	23748	860	16424	22391	814	15471	21064
4	-20	1102	21324	29625	962	18378	25262	916	17415	23874	869	16461	22519	823	15516	21195
5	-15	1111	21298	29704	972	18382	25358	925	17427	23974	879	16483	22624	832	15546	21303
0	-10	1120	21312	29850	981	18418	25507	935	17472	24126	888	16533	22774	842	15604	21456
	-5	1130	21456	30215	990	18564	25838	944	17619	24445	898	16682	23085	851	15753	21755
	0	1139	21625	30620	1000	18733	26204	953	17786	24797	907	16849	23424	860	15919	22082
	5	1148	23409	33295	1009	20281	28470	962	19258	26934	916	18246	25436	869	17244	23973
	10	1157	25519	36462	1018	22106	31146	971	20992	29457	925	19892	27811	878	18802	26203
1	-25	1080	19591	27381	941	16851	23318	895	15955	22027	848	15065	20763	802	14184	19530
4	-20	1090	19586	27486	951	16870	23432	904	15980	22141	858	15100	20883	811	14225	19651
0	-15	1099	19562	27560	960	16873	23521	913	15992	22235	867	15119	20979	821	14254	19753
0	-10	1108	19574	27695	969	16906	23659	923	16032	22374	876	15165	21119	830	14306	19893
	-5	1118	19699	28025	978	17033	23957	932	16161	22663	886	15296	21399	839	14437	20163
	0	1127	19844	28389	987	17179	24286	941	16307	22980	895	15442	21705	848	14584	20459
	5	1136	21392	30757	996	18524	26291	950	17586	24871	904	16658	23486	857	15736	22132
	10	1144	23204	33536	1005	20096	28643	959	19081	27088	912	18075	25570	866	17080	24091



Figure 4-28 (Sheet 5 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

2000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-25	1069	18018	25433	929	15485	21652	883	14656	20450	837	13833	19275	790	13016	18127
3	-20	1078	18012	25529	939	15502	21757	892	14679	20556	846	13864	19384	799	13054	18239
5	-15	1087	17991	25600	948	15506	21841	901	14690	20643	855	13882	19474	809	13081	18333
0	-10	1096	18000	25723	957	15534	21966	911	14726	20771	864	13923	19602	818	13128	18462
0	-5	1105	18107	26021	966	15646	22237	920	14839	21032	873	14038	19855	827	13244	18707
0	0	1114	18234	26351	975	15774	22534	929	14968	21320	882	14167	20132	836	13374	18975
	5	1123	19582	28454	984	16948	24317	937	16084	23000	891	15229	21715	845	14381	20461
	10	1132	21148	30906	993	18308	26391	946	17378	24956	900	16457	23555	853	15544	22188
1	-25	1057	16586	23641	917	14241	20120	871	13472	18999	825	12709	17905	778	11951	16836
3	-20	1066	16579	23730	927	14256	20217	880	13493	19098	834	12737	18006	787	11985	16939
0	-15	1075	16560	23796	936	14260	20295	889	13504	19179	843	12755	18091	796	12010	17026
0	-10	1084	16568	23911	945	14285	20410	898	13535	19296	852	12792	18208	805	12053	17145
0	-5	1093	16661	24180	954	14384	20656	907	13635	19533	861	12894	18438	814	12156	17367
	0	1102	16771	24479	963	14496	20925	916	13749	19794	870	13008	18689	823	12271	17609
	5	1111	17950	26354	971	15523	22514	925	14727	21292	878	13937	20099	832	13154	18935
	10	1119	19310	28528	980	16706	24353	933	15852	23025	887	15006	21730	841	14167	20466
1	-25	1061	15179	21724	922	13054	18536	876	12356	17521	829	11662	16529	783	10974	15561
2	-20	1070	15173	21803	931	13067	18622	885	12375	17609	838	11687	16619	792	11005	15653
5	-15	1080	15156	21862	940	13069	18689	894	12384	17680	848	11704	16694	801	11027	15729
0	-10	1089	15161	21960	950	13092	18792	903	12412	17783	857	11737	16798	810	11065	15834
0	-5	1098	15241	22196	959	13178	19008	912	12499	17992	866	11826	17000	820	11158	16032
	0	1107	15335	22457	968	13276	19245	922	12600	18222	875	11926	17221	829	11259	16246
	5	1116	16362	24113	976	14172	20649	930	13454	19547	883	12739	18469	837	12031	17418
	10	1124	17537	26021	984	15197	22265	938	14429	21070	892	13668	19905	845	12911	18766
1	-25	1070	13922	19961	931	11997	17088	884	11363	16171	838	10734	15277	792	10109	14403
2	-20	1079	13916	20031	940	12008	17163	894	11381	16250	847	10757	15356	801	10137	14483
0	-15	1089	13900	20080	949	12011	17222	903	11389	16311	856	10771	15420	810	10157	14550
0	-10	1098	13905	20167	959	12031	17312	912	11414	16401	866	10801	15512	819	10192	14643
0	-5	1107	13975	20375	968	12107	17502	921	11492	16587	875	10881	15692	829	10274	14818
	0	1116	14058	20606	977	12194	17712	931	11581	16790	884	10970	15888	838	10365	15008
	5	1125	14956	22066	985	12981	18954	939	12332	17963	893	11687	16995	846	11045	16047
	10	1133	15977	23740	994	13876	20377	947	13184	19305	901	12499	18260	854	11817	17238
1	-25	1079	12809	18380	940	11059	15787	894	10484	14961	847	9910	14152	801	9341	13362
1	-20	1089	12804	18440	949	11069	15852	903	10498	15027	857	9931	14221	810	9366	13432
5	-15	1098	12789	18482	959	11072	15903	912	10506	15080	866	9944	14277	820	9385	13491
0	-10	1107	12792	18556	968	11089	15980	922	10529	15160	875	9970	14355	829	9416	13571
0	-5	1117	12855	18741	978	11158	16150	931	10598	15323	885	10043	14516	838	9489	13726
	0	1126	12928	18945	987	11235	16335	940	10677	15503	894	10123	14690	848	9571	13895
	5	1135	13721	20241	995	11933	17440	949	11344	16548	902	10758	15675	856	10177	14823
	10	1143	14618	21720	1004	12721	18701	957	12096	17738	911	11476	16798	864	10859	15880
1	-25	1089	11814	16952	950	10220	14611	903	9694	13864	857	9171	13133	811	8652	12420
1	-20	1098	11808	17002	959	10229	14667	913	9708	13922	866	9189	13192	820	8674	12480
0	-15	1108	11796	17038	969	10231	14709	922	9714	13966	876	9202	13240	829	8690	12529
0	-10	1117	11798	17101	978	10247	14777	932	9735	14035	885	9225	13308	839	8719	12599
0	-5	1127	11855	17265	988	10308	14926	941	9798	14180	895	9291	13451	848	8785	12736
	0	1136	11920	17445	997	10378	15091	951	9870	14340	904	9363	13605	858	8860	12887
	5	1145	12626	18601	1006	11001	16079	959	10465	15274	913	9933	14488	866	9402	13718
	10	1153	13420	19915	1014	11701	17201	968	11135	16336	921	10572	15491	875	10012	14664



Figure 4-28 (Sheet 6 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

3000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1144	28994	38625	1005	25018	32975	958	23725	31178	912	22449	29425	866	21188	27713
6	-25	1154	29069	38867	1015	25117	33217	969	23832	31421	922	22562	29666	876	21308	27954
3	-20	1165	29084	39063	1025	25163	33419	979	23889	31625	933	22629	29872	886	21384	28161
0	-15	1175	29090	39255	1035	25201	33616	989	23937	31823	943	22688	30073	896	21453	28363
0	-10	1185	29503	40042	1045	25585	34308	999	24312	32487	953	23054	30708	906	21810	28970
0	-5	1195	30179	41228	1055	26195	35337	1009	24900	33465	962	23620	31637	916	22356	29853
0	0	1204	32050	43961	1065	27823	37664	1019	26450	35664	972	25094	33712	926	23757	31810
0	5	1214	36252	49694	1075	31429	42505	1028	29868	40226	982	28329	38004	935	25812	35839
0	10	1223	41854	57221	1084	36209	48833	1038	34390	46182	991	32599	43599	945	30839	41087
1	-30	1135	27484	36872	996	23709	31469	950	22481	29751	903	21266	28072	857	20066	26434
6	-25	1146	27553	37102	1006	23800	31698	960	22579	29980	913	21371	28301	867	20178	26663
3	-20	1156	27566	37290	1016	23843	31891	970	22632	30175	924	21435	28499	877	20250	26861
0	-15	1166	27570	37473	1026	23879	32080	980	22677	30365	934	21489	28689	887	20314	27053
0	-10	1176	27946	38208	1036	24230	32727	990	23021	30985	943	21824	29282	897	20643	27622
0	-5	1185	28562	39312	1046	24787	33684	1000	23559	31896	953	22343	30148	907	21143	28444
0	0	1195	30263	41833	1056	26269	35832	1009	24969	33925	963	23687	32065	916	22419	30249
0	5	1205	34054	47074	1065	29527	40259	1019	28060	38099	972	26612	35991	926	25184	35837
0	10	1214	39048	53879	1075	33797	45987	1028	32101	43490	982	30432	41059	935	28787	38690
1	-30	1124	25122	34064	984	21667	29068	938	20542	27480	892	19428	25928	845	18326	24412
5	-25	1134	25183	34278	994	21749	29281	948	20630	27692	902	19523	26140	855	18427	24623
5	-20	1144	25192	34450	1004	21787	29459	958	20677	27871	912	19579	26320	865	18492	24805
0	-15	1153	25193	34618	1014	21818	29633	968	20717	28046	921	19627	26496	875	18549	24982
0	-10	1163	25516	35273	1024	22121	30210	978	21014	28599	931	19918	27025	885	18835	25490
0	-5	1173	26044	36251	1034	22601	31059	987	21477	29406	941	20367	27794	894	19267	26219
0	0	1182	27506	38475	1043	23876	32952	996	22693	31196	950	21524	29483	903	20367	27810
0	5	1190	30737	43053	1051	26657	36818	1005	25331	34840	958	24021	32909	912	22729	31028
0	10	1198	34945	48943	1059	30259	41773	1012	28740	39501	966	27244	37288	919	25768	35132
1	-30	1112	23008	31522	973	19840	26898	927	18805	25425	880	17780	23987	834	16766	22583
5	-25	1122	23060	31717	983	19912	27092	936	18882	25618	890	17865	24180	844	16857	22776
5	-20	1132	23068	31877	993	19945	27255	946	18924	25783	900	17915	24346	853	16914	22942
0	-15	1142	23068	32033	1002	19971	27414	956	18960	25944	910	17959	24509	863	16966	23105
0	-10	1151	23345	32617	1012	20235	27931	966	19219	26440	919	18212	24983	873	17216	23560
0	-5	1161	23800	33487	1022	20649	28686	975	19620	27159	929	18601	25667	882	17592	24210
0	0	1170	25054	35440	1031	21746	30351	984	20666	28732	938	19598	27152	891	18540	25609
0	5	1178	27798	39411	1039	24114	33708	992	22913	31895	946	21727	30128	900	20555	28404
0	10	1185	31315	44449	1046	27132	37950	1000	25774	35889	953	24432	33880	907	23108	31922
1	-30	1101	21114	29222	961	18197	24929	915	17244	23563	869	16299	22227	822	15363	20923
4	-25	1110	21158	29399	971	18261	25106	925	17313	23739	878	16374	22404	832	15444	21100
5	-20	1120	21163	29547	981	18290	25257	934	17350	23891	888	16419	22557	842	15497	21254
0	-15	1130	21163	29692	991	18315	25406	944	17382	24040	898	16459	22707	851	15543	21404
0	-10	1139	21403	30216	1000	18543	25868	954	17608	24485	907	16680	23132	861	15762	21812
0	-5	1149	21797	30994	1010	18904	26544	963	17957	25128	917	17020	23745	870	16091	22394
0	0	1158	22879	32719	1018	19852	28014	972	18863	26518	926	17884	25058	879	16913	23631
0	5	1166	25226	36186	1026	21881	30947	980	20790	29282	934	19710	27658	887	18641	26072
0	10	1173	28192	40531	1034	24433	34609	987	23209	32729	941	22000	30897	894	20804	29110
1	-30	1089	19405	27127	950	16715	23136	903	15833	21864	857	14960	20623	810	14093	19410
4	-25	1099	19444	27290	959	16770	23297	913	15895	22026	866	15027	20785	820	14166	19571
5	-20	1108	19447	27426	969	16797	23437	922	15928	22166	876	15067	20925	830	14214	19713
0	-15	1118	19446	27560	978	16817	23572	932	15957	22304	886	15104	21064	839	14257	19852
0	-10	1127	19654	28032	988	17018	23991	941	16154	22704	895	15298	21448	849	14450	20221
0	-5	1136	19996	28729	997	17333	24597	951	16461	23283	904	15595	21997	858	14738	20743
0	0	1145	20935	30260	1006	18158	25903	959	17248	24516	913	16347	23162	867	15455	21842
0	5	1153	22955	33306	1014	19907	28480	967	18909	26944	921	17923	25447	875	16946	23986
0	10	1160	25475	37080	1021	22079	31661	974	20970	29940	928	19875	28263	882	18791	26627

Figure 4-28 (Sheet 7 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15⁰

3000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-30	1077	17856	25209	938	15368	21492	891	14552	20309	845	13743	19153	799	12940	18024
3	-25	1087	17890	25359	947	15417	21640	901	14607	20457	854	13803	19301	808	13006	18172
5	-20	1096	17891	25483	957	15441	21769	910	14637	20586	864	13840	19431	818	13050	18303
0	-15	1105	17889	25607	966	15460	21895	920	14663	20713	873	13872	19558	827	13088	18430
0	-10	1115	18071	26034	976	15636	22273	929	14837	21076	883	14045	19906	836	13258	18763
	-5	1124	18370	26662	985	15912	22819	938	15105	21595	892	14306	20401	845	13512	19233
	0	1133	19188	28026	993	16631	23981	947	15794	22696	900	14962	21438	854	14139	20213
	5	1140	20935	30714	1001	18146	26256	955	17234	24839	908	16328	23454	862	15432	22105
	10	1147	23091	34013	1008	20008	29038	962	19001	27459	915	18002	25916	869	17015	24414
1	-30	1065	16441	23436	926	14138	19975	880	13382	18873	833	12631	17796	787	11887	16745
3	-25	1074	16473	23580	935	14184	20116	889	13433	19013	842	12686	17934	796	11947	16884
5	-20	1084	16475	23697	945	14205	20234	898	13460	19132	852	12720	18055	805	11986	17003
0	-15	1093	16472	23811	954	14222	20351	907	13482	19248	861	12750	18173	815	12022	17122
0	-10	1102	16631	24197	963	14377	20693	917	13637	19578	870	12902	18487	824	12173	17424
	-5	1111	16892	24763	972	14619	21185	926	13874	20047	879	13132	18933	833	12397	17848
	0	1120	17608	25983	981	15251	22226	934	14476	21029	888	13709	19862	841	12946	18722
	5	1127	19126	28366	988	16568	24241	942	15729	22929	895	14897	21648	849	14073	20399
	10	1134	20982	31266	995	18172	26686	949	17252	25231	902	16340	23811	856	15437	22427
1	-30	1074	15038	21493	934	12957	18375	888	12273	17382	842	11595	16412	795	10920	15464
2	-25	1083	15064	21619	943	12997	18499	897	12317	17505	850	11642	16534	804	10972	15585
5	-20	1092	15064	21720	953	13015	18603	906	12341	17610	860	11672	16639	814	11008	15692
0	-15	1102	15061	21819	962	13029	18704	916	12362	17712	869	11698	16742	823	11039	15794
0	-10	1111	15199	22160	971	13165	19007	925	12497	18003	879	11833	17022	832	11172	16062
	-5	1120	15427	22661	980	13377	19442	934	12704	18418	888	12035	17417	841	11370	16439
	0	1126	16058	23768	987	13932	20383	940	13233	19305	894	12539	18252	847	11850	17223
	5	1128	17399	25949	989	15089	22214	943	14331	21027	896	13577	19865	850	12831	18734
	10	1127	19049	28648	988	16501	24466	941	15665	23137	895	14837	21841	849	14016	20576
1	-30	1083	13804	19759	943	11918	16948	897	11297	16052	850	10680	15175	804	10067	14319
2	-25	1092	13826	19869	952	11952	17056	906	11335	16159	859	10722	15282	813	10113	14425
5	-20	1101	13825	19957	962	11968	17147	915	11356	16250	869	10749	15375	823	10145	14518
0	-15	1111	13822	20044	971	11980	17234	925	11375	16340	879	10773	15465	832	10174	14610
0	-10	1120	13943	20344	981	12101	17503	934	11494	16597	888	10892	15713	841	10292	14846
	-5	1129	14142	20786	990	12288	17889	943	11677	16965	897	11070	16063	851	10468	15182
	0	1135	14690	21760	996	12771	18717	950	12140	17748	903	11512	16801	857	10888	15875
	5	1138	15847	23668	998	13771	20322	952	13090	19258	906	12413	18218	859	11739	17201
	10	1136	17246	26002	997	14973	22274	951	14228	21090	904	13486	19931	858	12752	18803
1	-30	1092	12710	18201	953	10995	15664	906	10429	14854	860	9868	14063	814	9309	13289
1	-25	1101	12727	18295	962	11024	15757	915	10462	14947	869	9904	14155	823	9350	13382
5	-20	1111	12727	18373	972	11039	15837	925	10481	15027	879	9929	14237	832	9378	13462
0	-15	1120	12723	18447	981	11050	15914	935	10498	15105	888	9949	14314	842	9404	13542
0	-10	1130	12831	18714	991	11157	16151	944	10605	15334	898	10056	14534	851	9510	13753
	-5	1139	13007	19106	1000	11323	16494	953	10767	15660	907	10215	14846	861	9667	14051
	0	1145	13488	19968	1006	11748	17228	960	11175	16355	913	10605	15501	867	10039	14667
	5	1148	14495	21648	1008	12622	18645	962	12006	17689	916	11394	16755	869	10784	15840
	10	1146	15695	23684	1007	13657	20352	960	12986	19291	914	12320	18255	868	11659	17244
1	-30	1102	11731	16793	963	10167	14502	916	9650	13769	870	9138	13055	823	8626	12354
1	-25	1111	11745	16873	972	10192	14582	925	9679	13849	879	9170	13134	833	8663	12434
5	-20	1121	11745	16940	982	10205	14650	935	9697	13919	889	9192	13204	842	8688	12504
0	-15	1131	11742	17004	991	10215	14716	945	9712	13986	899	9212	13273	852	8713	12574
0	-10	1140	11837	17239	1001	10311	14927	954	9807	14188	908	9307	13467	862	8809	12762
	-5	1149	11994	17588	1010	10459	15232	964	9954	14481	917	9449	13744	871	8949	13027
	0	1156	12419	18354	1017	10837	15886	970	10315	15099	924	9797	14330	877	9280	13577
	5	1158	13303	19842	1019	11607	17144	972	11048	16284	926	10492	15443	879	9939	14621
	10	1156	14344	21633	1017	12506	18647	971	11901	17696	924	11299	16766	878	10702	15859



Figure 4-28 (Sheet 8 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15⁰

4000 FEET

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-30	1163	28249	37865	1024	24448	32414	977	23210	30678	931	21988	28985	884	20779	27330
6	-25	1173	28371	38178	1034	24585	32714	988	23354	30976	941	22135	29277	895	20932	27619
3	-20	1184	28611	38693	1044	24822	33181	998	23590	31429	952	22372	29717	905	21167	28044
0	-15	1194	28891	39271	1055	25095	33703	1008	23858	31930	962	22638	30201	915	21430	28511
0	-10	1204	30359	41545	1065	26380	35643	1018	25086	33767	972	23808	31935	926	22546	30148
0	-5	1214	32004	44106	1075	27817	37825	1028	26456	35829	982	25114	33883	936	23789	31984
0	0	1224	35770	49297	1085	31059	42218	1038	29532	39973	992	28028	37785	946	26545	35653
0	5	1234	41180	56567	1095	35686	48346	1048	33913	45745	1002	32169	43213	955	30452	40747
0	10	1243	48735	66510	1104	42096	56678	1058	39967	53580	1011	37876	50566	965	35826	47638
1	-30	1154	26790	36160	1015	23180	30946	969	22004	29286	922	20840	27664	876	19691	26082
6	-25	1165	26906	36462	1025	23309	31233	979	22138	29570	932	20979	27944	886	19833	26357
3	-20	1175	27124	36944	1036	23528	31673	989	22355	29994	943	21197	28356	896	20050	26755
0	-15	1185	27379	37484	1046	23777	32161	999	22602	30465	953	21442	28811	907	20294	27195
0	-10	1195	28722	39598	1056	24954	33964	1009	23727	32172	963	22515	30423	917	21317	28716
0	-5	1205	30220	41969	1066	26265	35985	1019	24978	34082	973	23708	32227	926	22452	30416
0	0	1215	33627	46732	1075	29200	40016	1029	27765	37886	982	26348	35808	936	24951	33784
0	5	1224	38454	53311	1085	33337	45567	1039	31684	43116	992	30054	40727	946	28450	38401
0	10	1234	45094	62184	1094	38987	53015	1048	37024	50123	1002	35094	47307	955	33197	44568
1	-30	1143	24513	33436	1004	21207	28612	957	20127	27075	911	19060	25576	864	18002	24109
5	-25	1153	24611	33708	1014	21319	28872	967	20244	27332	921	19181	25828	874	18128	24358
5	-20	1163	24799	34141	1024	21508	29266	977	20434	27714	931	19371	26198	885	18320	24718
0	-15	1173	25019	34626	1034	21725	29705	988	20650	28138	941	19586	26608	895	18533	25113
0	-10	1183	26173	36488	1044	22740	31296	997	21620	29643	951	20513	28031	905	19418	26456
0	-5	1193	27453	38568	1054	23864	33070	1007	22694	31322	961	21537	29615	914	20393	27949
0	0	1201	30371	42756	1061	26379	36611	1015	25081	34660	969	23800	32757	922	22533	30900
0	5	1208	34460	48490	1069	29886	41444	1022	28402	39209	976	26941	37034	929	25498	34912
0	10	1217	39878	55913	1078	34513	47687	1032	32782	45087	985	31077	42555	939	29400	40091
1	-30	1131	22478	30978	992	19440	26504	945	18446	25078	899	17463	23686	853	16490	22327
5	-25	1141	22562	31224	1002	19538	26740	955	18549	25311	909	17571	23917	863	16602	22554
5	-20	1151	22725	31615	1012	19704	27097	966	18717	25658	919	17738	24251	873	16770	22878
0	-15	1161	22916	32052	1022	19893	27491	976	18906	26040	929	17927	24620	883	16958	23235
0	-10	1171	23914	33703	1032	20774	28903	985	19748	27375	939	18733	25884	892	17726	24425
0	-5	1181	25016	35540	1041	21743	30470	995	20675	28857	949	19618	27283	902	18571	25746
0	0	1188	27494	39175	1049	23885	33547	1003	22710	31760	956	21547	30014	910	20398	28313
0	5	1195	30914	44082	1056	26826	37687	1010	25497	35658	963	24185	33680	917	22889	31751
0	10	1201	35493	50560	1062	30736	43124	1015	29195	40770	969	27677	38478	922	26179	36244
1	-30	1119	20649	28747	980	17850	24590	934	16934	23266	887	16025	21970	841	15125	20706
4	-25	1129	20722	28971	990	17936	24804	944	17025	23478	897	16120	22179	851	15225	20913
5	-20	1139	20864	29326	1000	18082	25127	954	17172	23791	907	16269	22484	861	15375	21208
0	-15	1149	21030	29720	1010	18248	25484	963	17337	24135	917	16435	22817	871	15541	21530
0	-10	1159	21899	31192	1019	19015	26742	973	18073	25326	927	17139	23943	880	16212	22591
0	-5	1168	22851	32820	1029	19856	28133	983	18878	26643	936	17907	25185	890	16947	23764
0	0	1176	24973	36000	1037	21694	30826	990	20623	29180	944	19564	27576	897	18515	26009
0	5	1183	27859	40235	1044	24180	34400	997	22982	32548	951	21798	30742	904	20626	28980
0	10	1188	31654	45737	1049	27430	39024	1002	26058	36897	956	24704	34824	910	23368	32805
1	-30	1107	18997	26712	968	16410	22840	922	15563	21608	875	14722	20402	829	13889	19226
4	-25	1117	19060	26916	978	16487	23037	932	15644	21801	885	14807	20593	839	13978	19414
5	-20	1127	19184	27237	988	16616	23331	941	15773	22085	895	14939	20870	849	14112	19682
0	-15	1137	19329	27595	998	16762	23654	951	15920	22398	905	15086	21172	858	14258	19973
0	-10	1146	20087	28911	1007	17434	24779	961	16565	23464	914	15703	22179	868	14849	20925
0	-5	1156	20917	30364	1016	18166	26018	970	17267	24637	924	16375	23288	877	15490	21970
0	0	1163	22743	33159	1024	19751	28387	977	18772	26869	931	17803	25388	885	16844	23944
0	5	1170	25197	36840	1031	21869	31496	984	20782	29798	938	19708	28142	891	18644	26527
0	10	1175	28375	41559	1036	24596	35463	989	23366	33531	943	22150	31646	897	20949	29810



Figure 4-28 (Sheet 9 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

4000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-30	1095	17495	24843	956	15101	21235	910	14316	20086	863	13536	18962	817	12763	17866
3	-25	1105	17551	25030	966	15170	21415	919	14388	20263	873	13613	19138	826	12843	18038
5	-20	1115	17660	25323	975	15283	21681	929	14503	20521	883	13730	19389	836	12962	18282
0	-15	1124	17786	25647	985	15412	21975	939	14634	20807	892	13860	19663	846	13094	18548
0	-10	1134	18452	26829	994	16003	22986	948	15200	21762	902	14404	20568	855	13613	19401
	-5	1143	19176	28128	1004	16645	24096	957	15815	22812	911	14992	21559	865	14176	20336
	0	1150	20756	30598	1011	18017	26187	965	17120	24784	918	16231	23415	872	15350	22079
	5	1157	22856	33817	1018	19832	28906	971	18843	27346	925	17864	25823	878	16894	24338
	10	1162	25540	37896	1023	22139	32337	976	21029	30573	930	19932	28853	883	18846	27177
1	-30	1087	16098	23052	948	13890	19709	901	13164	18643	855	12445	17603	809	11730	16587
3	-25	1096	16150	23231	957	13953	19879	910	13230	18809	864	12514	17766	817	11802	16746
0	-20	1106	16244	23493	967	14053	20118	920	13332	19042	874	12618	17993	827	11908	16966
0	-15	1115	16354	23783	976	14166	20382	930	13447	19298	883	12733	18239	837	12025	17206
0	-10	1124	16941	24851	985	14687	21293	939	13948	20162	892	13212	19054	846	12484	17975
	-5	1133	17578	26023	994	15252	22293	947	14488	21105	901	13731	19947	854	12978	18814
	0	1137	18975	28275	998	16460	24190	952	15636	22892	905	14817	21623	859	14006	20385
	5	1144	20782	31105	1004	18023	26580	958	17120	25142	912	16226	23740	865	15338	22371
	10	1148	23064	34654	1009	19988	29566	963	18983	27951	916	17987	26376	870	17002	24841
1	-30	1095	14744	21157	956	12747	18144	910	12090	17183	863	11437	16244	817	10789	15327
2	-25	1105	14788	21314	965	12800	18291	919	12147	17329	872	11497	16387	826	10853	15468
5	-20	1114	14869	21543	975	12888	18503	929	12237	17534	882	11589	16586	836	10947	15662
0	-15	1124	14965	21799	985	12988	18736	939	12338	17760	892	11692	16806	846	11050	15873
0	-10	1133	15474	22737	994	13442	19539	947	12774	18520	901	12111	17525	855	11452	16552
	-5	1142	16024	23763	1003	13932	20416	956	13244	19350	910	12562	18310	863	11883	17292
	0	1141	17253	25826	1001	14987	22140	955	14244	20969	909	13506	19824	862	12773	18707
	5	1137	18877	28511	997	16374	24378	951	15554	23064	905	14740	21782	858	13933	20532
	10	1135	20884	31761	996	18090	27090	949	17174	25606	903	16269	24161	856	15370	22750
1	-30	1105	13552	19464	965	11738	16743	919	11142	15877	873	10549	15029	826	9958	14199
2	-25	1114	13588	19599	974	11784	16872	928	11191	16003	882	10601	15153	835	10014	14322
0	-20	1124	13660	19802	984	11862	17059	938	11271	16185	892	10683	15330	845	10097	14493
0	-15	1134	13744	20027	994	11950	17264	948	11360	16384	902	10774	15523	855	10190	14681
0	-10	1143	14190	20856	1003	12350	17976	957	11745	17058	911	11143	16161	864	10545	15284
	-5	1152	14670	21760	1012	12779	18751	966	12158	17793	919	11539	16855	873	10925	15940
	0	1150	15722	23560	1011	13687	20259	964	13017	19208	918	12353	18182	872	11693	17180
	5	1146	17097	25882	1007	14864	22197	960	14130	21024	914	13403	19881	867	12680	18763
	10	1133	18850	28888	994	16345	24676	948	15523	23338	901	14708	22032	855	13900	20760
1	-30	1114	12491	17937	975	10840	15481	929	10296	14697	882	9755	13930	836	9217	13181
1	-25	1124	12523	18056	984	10880	15593	938	10340	14808	892	9802	14040	845	9266	13288
5	-20	1134	12586	18234	994	10950	15758	948	10411	14968	902	9875	14195	855	9341	13439
0	-15	1144	12660	18432	1004	11028	15939	958	10491	15144	912	9956	14366	865	9424	13605
0	-10	1153	13054	19168	1014	11383	16572	967	10832	15744	921	10285	14935	874	9740	14143
	-5	1162	13476	19968	1023	11763	17261	976	11198	16397	930	10637	15553	883	10078	14727
	0	1160	14387	21550	1021	12550	18588	975	11945	17644	928	11343	16721	882	10746	15820
	5	1156	15564	23576	1017	13561	20282	970	12901	19232	924	12247	18208	877	11596	17207
	10	1143	17028	26159	1004	14800	22414	957	14067	21223	911	13341	20061	864	12619	18927
1	-30	1125	11541	16555	985	10033	14335	939	9536	13626	893	9042	12934	846	8549	12255
1	-25	1134	11567	16656	995	10069	14433	948	9574	13722	902	9082	13027	855	8592	12347
0	-20	1144	11623	16812	1005	10131	14577	958	9638	13863	912	9148	13164	866	8661	12482
0	-15	1154	11689	16987	1015	10201	14737	969	9711	14019	922	9221	13315	876	8736	12629
0	-10	1163	12039	17641	1024	10518	15302	978	10016	14555	931	9516	13824	885	9019	13109
	-5	1173	12415	18355	1033	10856	15915	987	10342	15137	940	9830	14375	894	9321	13631
	0	1171	13211	19755	1032	11546	17093	985	10996	16242	939	10451	15413	892	9907	14601
	5	1166	14228	21535	1027	12421	18582	981	11827	17642	934	11235	16723	888	10647	15825
	10	1153	15465	23775	1014	13470	20434	967	12813	19370	921	12161	18332	874	11513	17318



Figure 4-28 (Sheet 10 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1171	27342	36932	1032	23702	31657	986	22517	29978	939	21344	28337	893	20185	26735
6	-30	1182	27477	37322	1043	23850	32019	996	22668	30330	950	21500	28682	903	20344	27071
3	-25	1193	27887	38083	1053	24232	32692	1007	23043	30978	961	21866	29303	914	20702	27666
0	-20	1203	28469	39086	1064	24762	33570	1018	23556	31817	971	22362	30102	925	21183	28430
0	-15	1214	29800	41086	1074	25933	35288	1028	24675	33445	982	23432	31645	935	22203	29888
0	-10	1224	32409	44786	1085	28196	38437	1038	26827	36420	992	25476	34453	945	24142	32533
	-5	1234	35745	49450	1095	31075	42394	1048	29562	40156	1002	28070	37974	956	26600	35848
	0	1244	40905	56418	1105	35497	48278	1058	33751	45702	1012	32033	43193	966	30343	40751
	5	1254	47816	65600	1115	41379	55993	1068	39311	52962	1022	37282	50015	976	35289	47149
	10	1264	57946	78739	1125	49915	66950	1078	47354	63248	1032	44849	59655	985	42397	56168
1	-35	1164	25927	35247	1025	22474	30210	978	21347	28606	932	20234	27040	885	19131	25508
6	-30	1175	26053	35621	1035	22612	30556	989	21490	28944	942	20379	27367	896	19281	25829
3	-25	1185	26433	36341	1046	22967	31193	999	21837	29555	953	20719	27954	906	19613	26390
0	-20	1195	26970	37284	1056	23457	32019	1009	22311	30342	963	21178	28705	917	20058	27107
0	-15	1205	28205	39172	1066	24542	33637	1019	23348	31875	973	22169	30157	926	21002	28478
0	-10	1214	30598	42616	1075	26618	36566	1029	25324	34644	982	24045	32767	936	22782	30937
	-5	1224	33615	46893	1085	29226	40196	1039	27803	38072	992	26397	35999	946	25011	33979
	0	1234	38220	53202	1095	33180	45529	1049	31551	43100	1002	29945	40731	956	28364	38426
	5	1244	44295	61402	1105	38365	52430	1059	36456	49597	1012	34578	46838	966	32734	44156
	10	1254	53033	72931	1115	45756	62070	1068	43428	58652	1022	41147	55333	975	38910	52108
1	-35	1152	23763	32642	1013	20594	27974	967	19559	26487	920	18534	25034	874	17520	23615
5	-30	1163	23870	32979	1024	20714	28287	977	19682	26791	931	18662	25332	884	17651	23905
5	-25	1173	24199	33624	1034	21023	28857	987	19985	27339	941	18958	25856	895	17942	24408
0	-20	1183	24664	34465	1044	21449	29594	998	20399	28043	951	19359	26527	905	18331	25049
0	-15	1193	25729	36131	1053	22386	31022	1007	21296	29397	961	20218	27811	914	19149	26260
0	-10	1201	27796	39178	1062	24182	33613	1016	23005	31844	969	21840	30116	923	20690	28432
	-5	1210	30399	42968	1070	26432	36825	1024	25143	34875	978	23869	32972	931	22610	31116
	0	1218	34281	48433	1079	29770	41443	1032	28307	39227	986	26865	37067	940	25442	34962
	5	1228	39237	55300	1088	34015	47233	1042	32329	44682	996	30668	42197	949	29032	39777
	10	1237	46179	64719	1098	39919	55134	1052	37907	52112	1005	35930	49171	959	33989	46314
1	-35	1141	21824	30285	1002	18907	25949	955	17952	24566	909	17007	23217	862	16070	21897
5	-30	1151	21915	30590	1012	19011	26232	965	18060	24843	919	17119	23487	873	16187	22162
0	-25	1161	22201	31169	1022	19281	26745	975	18325	25335	929	17379	23958	883	16442	22614
0	-20	1171	22606	31922	1032	19654	27406	985	18687	25966	939	17731	24561	893	16784	23189
0	-15	1181	23530	33401	1041	20469	28674	995	19469	27169	948	18478	25699	902	17497	24264
0	-10	1189	25311	36081	1050	22020	30954	1003	20945	29323	957	19882	27731	911	18830	26177
	-5	1197	27528	39382	1058	23941	33753	1012	22772	31965	965	21615	30219	919	20473	28517
	0	1204	30808	44123	1065	26765	37758	1019	25451	35739	972	24152	33769	926	22870	31849
	5	1211	34977	50083	1072	30336	42776	1025	28832	40461	979	27350	38207	933	25888	36011
	10	1220	40591	57912	1081	35130	49357	1035	33368	46655	988	31633	44023	942	29927	41465
1	-35	1129	20076	28139	990	17383	24103	943	16500	22816	897	15626	21559	850	14759	20332
4	-30	1139	20154	28417	1000	17474	24361	953	16595	23068	907	15725	21805	861	14863	20573
5	-25	1149	20404	28939	1010	17712	24824	963	16829	23512	917	15955	22232	871	15089	20981
0	-20	1159	20759	29617	1020	18039	25418	973	17148	24080	927	16265	22774	880	15389	21497
0	-15	1168	21563	30933	1029	18752	26549	983	17832	25154	936	16919	23789	890	16015	22458
0	-10	1177	23108	33305	1037	20097	28566	991	19113	27058	944	18138	25586	898	17173	24149
	-5	1185	25010	36198	1045	21748	31020	999	20684	29375	952	19630	27768	906	18588	26202
	0	1191	27776	40291	1052	24135	34480	1006	22950	32636	959	21777	30836	913	20618	29081
	5	1198	31231	45357	1059	27104	38751	1012	25763	36656	966	24440	34616	920	23133	32627
	10	1203	35948	52165	1064	31129	44459	1017	29569	42022	971	28032	39649	924	26516	37338
1	-35	1117	18492	26175	978	16000	22412	931	15183	21214	885	14373	20043	838	13568	18897
4	-30	1127	18559	26428	988	16080	22648	941	15267	21443	895	14461	20267	848	13660	19116
0	-25	1137	18779	26901	998	16290	23067	951	15473	21845	905	14664	20652	858	13861	19487
0	-20	1147	19090	27512	1007	16578	23603	961	15755	22358	914	14938	21142	868	14128	19954
0	-15	1156	19795	28691	1016	17204	24616	970	16355	23318	924	15513	22051	877	14678	20813
0	-10	1164	21140	30798	1025	18378	26408	978	17473	25011	932	16578	23648	885	15689	22316
	-5	1172	22781	33348	1032	19805	28572	986	18832	27054	940	17869	25572	893	16913	24125
	0	1178	25132	36906	1039	21837	31581	993	20762	29890	946	19697	28239	900	18644	26629
	5	1185	28023	41252	1046	24327	35247	999	23123	33342	953	21934	31485	906	20757	29674
	10	1189	31912	47020	1050	27654	40088	1004	26272	37893	957	24907	35754	911	23560	33671

Figure 4-28 (Sheet 11 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

5000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1105	17049	24368	966	14740	20858	919	13981	19738	873	13229	18646	826	12482	17578
3	-30	1115	17108	24600	975	14809	21071	929	14056	19949	883	13308	18851	836	12564	17778
5	-25	1124	17300	25027	985	14995	21452	939	14239	20313	892	13488	19201	846	12743	18114
0	-20	1134	17575	25580	995	15251	21937	948	14488	20777	902	13731	19643	856	12980	18536
0	-15	1143	18195	26640	1004	15802	22847	957	15017	21639	911	14238	20460	864	13465	19308
0	-10	1151	19372	28520	1012	16831	24446	965	15997	23149	919	15171	21883	873	14352	20648
	-5	1159	20795	30778	1019	18069	26361	973	17178	24958	927	16293	23587	880	15416	22249
	0	1165	22806	33891	1026	19810	28994	980	18831	27439	933	17861	25921	887	16900	24440
	5	1172	25246	37649	1032	21915	32166	986	20829	30426	939	19753	28728	893	18689	27074
	10	1176	28479	42570	1037	24688	36299	990	23453	34311	944	22234	32375	897	21028	30487
1	-35	1103	15664	22520	964	13550	19301	917	12855	18275	871	12165	17273	824	11479	16292
3	-30	1112	15720	22743	973	13615	19504	926	12922	18471	880	12235	17463	833	11553	16478
0	-25	1121	15894	23142	981	13780	19854	935	13086	18808	889	12397	17785	842	11711	16784
0	-20	1129	16140	23653	990	14009	20301	944	13309	19234	897	12613	18190	851	11922	17170
0	-15	1135	16705	24660	996	14506	21156	949	13783	20040	903	13066	18950	856	12353	17885
0	-10	1138	17773	26437	999	15430	22651	952	14661	21447	906	13898	20271	860	13141	19123
	-5	1146	19014	28446	1006	16511	24355	960	15691	23055	913	14876	21784	867	14070	20546
	0	1152	20743	31182	1013	18010	26670	966	17114	25234	920	16227	23835	873	15347	22469
	5	1158	22816	34454	1019	19801	29430	972	18815	27835	926	17839	26280	880	16872	24762
	10	1162	25529	38689	1023	22131	32988	976	21021	31179	930	19925	29418	884	18841	27701
1	-35	1112	14379	20701	972	12461	17794	926	11830	16867	880	11204	15962	833	10581	15076
2	-30	1121	14425	20894	981	12516	17971	935	11889	17040	889	11265	16129	842	10645	15239
5	-25	1130	14575	21245	990	12661	18280	944	12031	17335	897	11405	16411	851	10784	15510
0	-20	1138	14787	21693	999	12859	18673	953	12225	17710	906	11594	16768	860	10968	15849
0	-15	1144	15272	22574	1005	13287	19421	958	12634	18417	912	11985	17435	865	11340	16475
0	-10	1145	16193	24149	1006	14084	20745	960	13392	19662	913	12703	18603	867	12019	17569
	-5	1145	17310	26052	1006	15045	22338	959	14301	21157	913	13564	20004	866	12831	18878
	0	1139	18893	28714	1000	16394	24552	953	15574	23229	907	14762	21939	861	13956	20679
	5	1144	20672	31596	1005	17931	26981	959	17034	25516	912	16144	24086	866	15262	22691
	10	1148	22966	35267	1009	19904	30065	962	18902	28414	916	17911	26805	870	16930	25237
1	-35	1121	13240	19065	982	11497	16441	935	10922	15602	889	10351	14783	843	9784	13983
2	-30	1130	13279	19235	991	11545	16596	944	10972	15753	898	10405	14930	852	9840	14125
5	-25	1139	13410	19544	1000	11671	16868	953	11098	16014	907	10528	15179	861	9962	14364
0	-20	1148	13595	19939	1009	11845	17215	962	11267	16344	916	10694	15495	869	10124	14664
0	-15	1153	14014	20712	1014	12216	17873	968	11624	16968	921	11034	16081	875	10450	15218
0	-10	1155	14807	22092	1016	12904	19034	969	12278	18060	923	11656	17108	876	11037	16178
	-5	1154	15758	23746	1015	13725	20422	969	13057	19364	922	12393	18330	876	11734	17321
	0	1148	17091	26043	1009	14864	22335	963	14133	21156	916	13406	20003	870	12685	18879
	5	1142	18676	28768	1003	16214	24599	956	15406	23274	910	14605	21981	863	13810	20720
	10	1134	20718	32222	995	17946	27460	948	17038	25949	902	16139	24477	855	15247	23041
1	-35	1131	12225	17588	992	10634	15214	945	10109	14456	899	9588	13716	853	9069	12991
1	-30	1140	12258	17736	1001	10676	15351	955	10155	14590	908	9635	13844	862	9119	13116
5	-25	1149	12372	18007	1010	10788	15592	964	10265	14820	917	9745	14065	871	9228	13327
0	-20	1158	12535	18357	1019	10940	15897	972	10414	15111	926	9892	14344	880	9372	13594
0	-15	1164	12901	19040	1024	11265	16479	978	10727	15663	932	10191	14864	885	9658	14083
0	-10	1165	13588	20254	1026	11865	17505	979	11296	16626	933	10732	15770	887	10171	14932
	-5	1165	14408	21705	1025	12574	18723	979	11970	17772	933	11371	16845	886	10774	15937
	0	1158	15542	23703	1019	13546	20390	973	12890	19335	926	12237	18304	880	11589	17298
	5	1152	16875	26053	1012	14683	22343	966	13964	21165	919	13249	20014	873	12540	18891
	10	1134	18623	29183	995	16151	24913	948	15340	23557	902	14537	22236	855	13738	20946
1	-35	1141	11311	16244	1002	9857	14099	956	9377	13414	909	8899	12743	863	8424	12088
1	-30	1151	11341	16375	1012	9894	14218	965	9416	13529	919	8941	12856	872	8468	12196
0	-25	1160	11441	16614	1021	9993	14431	974	9514	13732	928	9039	13051	881	8565	12383
0	-20	1169	11584	16922	1030	10129	14702	983	9647	13991	937	9170	13298	890	8693	12619
0	-15	1174	11905	17527	1035	10415	15218	989	9923	14481	942	9434	13760	896	8947	13055
0	-10	1176	12507	18603	1036	10939	16125	990	10423	15336	944	9909	14563	897	9398	13808
	-5	1175	13218	19881	1036	11558	17202	989	11010	16347	943	10466	15513	897	9925	14697
	0	1169	14195	21635	1029	12396	18666	983	11804	17721	936	11214	16796	890	10629	15893
	5	1162	15329	23678	1022	13366	20369	976	12721	19316	930	12080	18288	883	11443	17284
	10	1143	16772	26355	1004	14580	22568	958	13860	21365	911	13144	20190	865	12435	19045



Figure 4-28 (Sheet 12 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15⁰**
ANTI - ICE SYSTEMS ON **6000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 0 0	-35	1192	27345	37321	1052	23766	32049	1006	22600	30372	959	21446	28732	913	20306	27131
	-30	1202	27934	38385	1063	24303	32977	1017	23120	31256	970	21949	29574	924	20793	27934
	-25	1213	29000	40072	1073	25245	34428	1027	24023	32633	981	22816	30882	934	21621	29170
	-20	1223	30150	41896	1084	26263	35998	1038	24999	34124	991	23749	32294	945	22514	30508
	-15	1234	32766	45560	1095	28534	39123	1048	27159	37079	1002	25802	35084	955	24462	33138
	-10	1244	36259	50349	1105	31550	43194	1058	30024	40924	1012	28521	38712	966	27039	36557
	-5	1254	41007	56781	1115	35628	48638	1069	33891	46061	1022	32181	43550	976	30499	41105
	0	1265	47571	65535	1125	41224	56007	1079	39186	53002	1033	37184	50077	986	35216	47231
	5	1275	56810	77609	1135	49032	66103	1089	46550	62488	1043	44121	58978	996	41741	55569
	10	1285	70939	95589	1145	60817	80983	1099	57620	76424	1053	54505	72011	1006	51469	67740
1 6 0 0	-35	1185	25919	35602	1045	22525	30571	999	21419	28970	952	20324	27405	906	19241	25878
	-30	1195	26456	36592	1056	23017	31436	1010	21896	29795	963	20786	28191	917	19688	26626
	-25	1206	27430	38157	1066	23880	32783	1020	22723	31073	973	21579	29404	927	20448	27774
	-20	1216	28484	39857	1077	24814	34246	1030	23618	32462	984	22437	30721	937	21267	29019
	-15	1224	30917	43333	1085	26922	37202	1039	25623	35254	992	24340	33354	946	23073	31500
	-10	1234	34078	47723	1095	29657	40937	1049	28223	38784	1002	26807	36683	956	25410	34635
	-5	1245	38323	53555	1105	33308	45877	1059	31687	43446	1013	30089	41076	966	28515	38767
	0	1255	44096	61379	1116	38245	52475	1069	36360	49661	1023	34508	46923	976	32685	44258
	5	1265	52073	71989	1126	45011	61368	1079	42750	58024	1033	40533	54775	986	38359	51618
	10	1275	63948	87402	1135	54971	74175	1089	52122	70934	1043	49340	66021	996	46621	62130
1 5 0 0	-35	1173	23750	32967	1034	20638	28306	987	19620	26820	941	18614	25370	894	17616	23952
	-30	1183	24214	33850	1044	21063	29076	998	20035	27557	951	19015	26071	905	18007	24622
	-25	1194	25056	35237	1054	21812	30271	1008	20753	28691	962	19706	27149	915	18668	25641
	-20	1204	25964	36739	1064	22618	31564	1018	21527	29919	972	20447	28312	925	19378	26743
	-15	1212	28050	39785	1072	24429	34156	1026	23250	32367	980	22084	30621	933	20930	28916
	-10	1219	30807	43729	1080	26812	37502	1033	25512	35523	987	24230	33596	940	22961	31713
	-5	1228	34381	48768	1089	29892	41771	1042	28436	39552	996	27001	37390	950	25584	35282
	0	1238	39095	55328	1099	33939	47314	1052	32272	44778	1006	30631	42308	960	29015	39903
	5	1248	45439	64012	1109	39347	54615	1062	37387	51649	1016	35462	48765	969	33569	45960
	10	1258	54540	76207	1118	47036	64799	1072	44639	61214	1026	42291	57734	979	39990	54355
1 5 0 0	-35	1161	21807	30583	1022	18943	26253	975	18005	24873	929	17077	23526	882	16156	22208
	-30	1171	22210	31374	1032	19314	26944	986	18367	25533	939	17428	24154	893	16498	22808
	-25	1181	22941	32608	1042	19967	28009	996	18995	26545	949	18030	25113	903	17076	23717
	-20	1191	23728	33943	1052	20667	29158	1006	19667	27636	959	18676	26148	913	17695	24697
	-15	1199	25524	36619	1060	22229	31436	1014	21154	29788	967	20090	28179	921	19037	26698
	-10	1206	27873	40051	1067	24263	34348	1021	23087	32536	974	21924	30768	928	20774	29044
	-5	1213	30927	44482	1074	26896	38097	1028	25586	36072	981	24291	34095	935	23013	32169
	0	1221	34882	50155	1082	30294	42887	1035	28806	40583	989	27340	38340	943	25894	36155
	5	1231	40010	57375	1092	34684	48971	1045	32963	46313	999	31271	43727	952	29603	41209
	10	1240	47151	67243	1101	40751	57240	1055	38597	54089	1008	36678	51024	962	34696	48047
1 4 0 0	-35	1149	20057	28414	1010	17414	24384	963	16547	23099	917	15689	21845	870	14837	20618
	-30	1159	20408	29125	1020	17739	25005	974	16865	23693	927	15997	22410	881	15138	21158
	-25	1169	21047	30229	1030	18311	25959	983	17414	24598	937	16526	23269	891	15646	21972
	-20	1179	21732	31420	1040	18922	26984	993	18002	25572	947	17091	24193	900	16187	22846
	-15	1187	23288	33785	1047	20276	28996	1001	19293	27474	954	18317	25986	908	17352	24535
	-10	1194	25304	36791	1054	22025	31548	1008	20956	29883	962	19897	28257	915	18848	26670
	-5	1200	27882	40619	1061	24254	34791	1015	23072	32941	968	21902	31134	922	20747	29374
	0	1207	31193	45504	1068	27102	38913	1021	25772	36823	975	24460	34786	928	23163	32801
	5	1213	35483	51752	1074	30776	44170	1028	29251	41770	981	27747	39432	935	26266	37158
	10	1223	41194	59883	1083	35649	50999	1037	33862	48196	991	32103	45468	944	30371	42814
1 4 0 0	-35	1137	18471	26428	997	16025	22670	951	15224	21474	905	14428	20304	858	13639	19162
	-30	1147	18779	27070	1008	16312	23232	961	15503	22010	915	14701	20816	868	13904	19648
	-25	1157	19340	28062	1017	16815	24088	971	15987	22823	925	15167	21588	878	14352	20380
	-20	1166	19938	29127	1027	17351	25007	981	16504	23697	934	15662	22414	888	14829	21164
	-15	1174	21292	31226	1035	18532	26794	988	17628	25383	942	16733	24007	895	15845	22662
	-10	1181	23034	33875	1041	20044	29042	995	19067	27506	949	18099	26006	902	17140	24543
	-5	1187	25228	37209	1048	21944	31866	1002	20873	30170	955	19811	28513	909	18761	26898
	0	1194	27999	41401	1054	24333	35407	1008	23139	33505	962	21959	31651	915	20792	29843
	5	1199	31542	46710	1060	27375	39877	1014	26021	37712	967	24684	35602	921	23364	33546
	10	1205	36289	53714	1066	31426	45748	1019	29852	43230	973	28301	40779	926	26772	38394



Figure 4-28 (Sheet 13 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15⁰

6000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-35	1124	17027	24601	985	14761	21095	939	14017	19978	892	13278	18887	846	12546	17822
3	-30	1134	17297	25181	995	15013	21602	949	14264	20463	902	13519	19349	856	12781	18262
5	-25	1144	17791	26075	1005	15458	22375	958	14691	21195	912	13932	20045	866	13178	18921
0	-20	1154	18318	27034	1014	15930	23201	968	15147	21981	922	14370	20790	875	13598	19626
0	-15	1161	19501	28904	1022	16964	24793	975	16131	23484	929	15307	22207	882	14488	20960
0	-10	1168	21014	31250	1028	18278	26783	982	17382	25363	935	16494	23976	889	15614	22623
	-5	1174	22893	34169	1035	19908	29257	988	18931	27695	942	17964	26172	895	17006	24686
	0	1180	25231	37796	1041	21928	32322	995	20850	30584	948	19782	28888	902	18726	27235
	5	1186	28178	42331	1046	24461	36140	1000	23251	34177	954	22056	32266	907	20873	30401
	10	1190	32069	48249	1051	27791	41106	1005	26403	38846	958	25031	36643	912	23679	34500
1	-35	1128	15615	22638	989	13555	19455	943	12878	18440	896	12205	17447	850	11537	16478
3	-30	1138	15856	23169	998	13778	19915	952	13096	18879	905	12417	17865	859	11744	16875
5	-25	1145	16297	23996	1006	14173	20624	959	13474	19549	913	12781	18500	866	12093	17475
0	-20	1152	16767	24884	1013	14592	21384	967	13877	20269	920	13167	19180	874	12463	18117
0	-15	1149	17876	26762	1010	15541	22949	963	14773	21735	917	14013	20551	870	13257	19394
0	-10	1154	19203	28868	1015	16693	24734	969	15870	23419	922	15053	22134	876	14244	20882
	-5	1161	20823	31440	1021	18098	26911	975	17206	25472	928	16321	24066	882	15445	22697
	0	1167	22810	34599	1027	19817	29580	981	18839	27987	934	17869	26431	888	16909	24915
	5	1172	25280	38502	1033	21946	32869	986	20858	31082	940	19782	29341	893	18716	27643
	10	1176	28492	43527	1037	24700	37087	990	23465	35047	944	22246	33060	898	21041	31126
1	-35	1137	14346	20812	998	12477	17937	952	11862	17020	905	11250	16123	859	10643	15248
2	-30	1147	14556	21280	1007	12672	18344	961	12053	17408	914	11437	16493	868	10825	15599
5	-25	1154	14936	22005	1015	13014	18967	968	12381	17998	922	11753	17052	876	11129	16127
0	-20	1161	15340	22782	1022	13376	19634	976	12730	18630	929	12088	17650	883	11450	16691
0	-15	1158	16277	24408	1019	14179	20990	972	13489	19901	926	12805	18839	879	12124	17800
0	-10	1151	17489	26473	1012	15212	22707	966	14465	21509	919	13722	20338	873	12986	19197
	-5	1147	18973	28970	1008	16480	24788	961	15661	23457	915	14851	22161	868	14046	20895
	0	1153	20671	31736	1013	17950	27124	967	17059	25659	921	16176	24231	874	15300	22837
	5	1158	22760	35123	1019	19752	29977	972	18768	28344	926	17795	26752	879	16830	25200
	10	1162	25437	39427	1023	22051	33591	976	20947	31742	930	19854	29940	883	18773	28184
1	-35	1147	13223	19170	1008	11521	16572	961	10960	15743	915	10402	14932	868	9847	14138
2	-30	1156	13405	19582	1017	11693	16932	971	11129	16087	924	10567	15259	878	10010	14452
5	-25	1164	13737	20223	1025	11992	17483	978	11416	16608	932	10845	15754	885	10276	14918
0	-20	1171	14088	20907	1032	12307	18070	986	11721	17166	939	11138	16282	893	10559	15418
0	-15	1167	14885	22324	1028	12992	19254	982	12370	18277	935	11750	17320	889	11135	16386
0	-10	1161	15907	24111	1022	13865	20741	975	13193	19668	929	12527	18620	882	11864	17596
	-5	1153	17170	26317	1014	14941	22573	967	14208	21382	921	13482	20220	875	12761	19086
	0	1145	18717	29015	1005	16254	24810	959	15447	23474	913	14646	22171	866	13851	20900
	5	1143	20544	32108	1004	17820	27395	958	16928	25900	911	16043	24441	865	15167	23020
	10	1147	22794	35824	1008	19755	30515	962	18762	28833	915	17777	27192	869	16803	25595
1	-35	1157	12218	17683	1018	10665	15335	972	10153	14586	925	9642	13851	879	9136	13135
1	-30	1167	12380	18049	1027	10817	15654	981	10302	14890	935	9790	14143	888	9280	13412
5	-25	1174	12670	18614	1035	11081	16142	989	10557	15353	942	10035	14581	896	9516	13826
0	-20	1182	12978	19220	1043	11359	16663	996	10824	15846	950	10293	15049	903	9764	14268
0	-15	1178	13663	20464	1039	11948	17703	992	11383	16822	946	10821	15961	899	10262	15119
0	-10	1171	14531	22021	1032	12692	19000	985	12085	18036	939	11484	17096	892	10885	16177
	-5	1163	15598	23932	1024	13603	20590	977	12945	19524	931	12294	18486	885	11646	17472
	0	1154	16890	26251	1015	14702	22514	969	13984	21327	922	13270	20167	876	12562	19036
	5	1142	18481	29109	1003	16048	24875	957	15250	23531	910	14458	22219	864	13672	20941
	10	1132	20488	32631	993	17746	27787	947	16848	26251	900	15958	24754	854	15076	23295
1	-35	1168	11314	16330	1029	9892	14207	982	9422	13529	936	8956	12866	890	8491	12217
1	-30	1178	11458	16655	1038	10028	14491	992	9557	13801	946	9088	13125	899	8620	12463
5	-25	1185	11714	17157	1046	10262	14925	1000	9783	14212	953	9305	13514	907	8831	12832
0	-20	1193	11985	17693	1054	10508	15387	1007	10020	14651	961	9535	13930	914	9051	13225
0	-15	1189	12577	18790	1049	11018	16304	1003	10504	15511	957	9993	14736	910	9484	13977
0	-10	1181	13322	20156	1042	11657	17443	996	11109	16578	949	10562	15731	903	10020	14906
	-5	1173	14232	21826	1034	12436	18833	988	11845	17880	941	11256	16948	895	10672	16039
	0	1164	15325	23837	1025	13368	20505	979	12725	19446	932	12085	18410	886	11450	17400
	5	1152	16647	26288	1013	14489	22532	966	13779	21338	920	13075	20174	874	12376	19038
	10	1135	18333	29410	995	15904	25096	949	15108	23728	903	14318	22393	856	13533	21092



Figure 4-28 (Sheet 14 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15⁰**
ANTI - ICE SYSTEMS ON **7000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1 6 3 0 0	-35	1211	28409	39296	1071	24733	33765	1025	23536	32006	978	22352	30288	932	21182	28611
	-30	1222	29788	41356	1082	25947	35538	1036	24698	33689	990	23463	31883	943	22242	30120
	-25	1233	31530	43897	1093	27473	37719	1047	26155	35757	1001	24853	33841	954	23566	31971
	-20	1244	33724	47039	1104	29385	40407	1058	27977	38302	1011	26587	36248	965	25215	34244
	-15	1254	37218	51848	1115	32405	44499	1069	30848	42170	1022	29311	39898	976	27797	37684
	-10	1265	41530	57707	1126	36115	49469	1079	34367	46862	1033	32647	44322	986	30953	41848
	-5	1275	47843	66164	1136	41507	56601	1090	39471	53583	1043	37471	50645	997	35507	47789
	0	1286	56441	77453	1146	48789	66062	1100	46345	62480	1054	43953	59002	1007	41608	55623
	5	1296	69444	94114	1157	59669	79891	1110	56575	75444	1064	53560	71139	1017	50619	66970
	10	1306	90589	120305	1167	77036	101306	1120	72810	95427	1074	68720	89762	1028	64758	84301
1 6 3 0 0	-35	1203	26886	37438	1064	23409	32169	1018	22275	30492	971	21153	28854	925	20044	27256
	-30	1213	28174	39403	1074	24540	33854	1027	23356	32090	981	22186	30367	935	21029	28686
	-25	1223	29785	41796	1084	25950	35905	1037	24702	34032	991	23469	32204	945	22250	30421
	-20	1234	31778	44691	1095	27690	38383	1048	26361	36379	1002	25049	34424	955	23753	32517
	-15	1244	34933	49090	1105	30422	42129	1059	28959	39921	1012	27515	37767	966	26092	35668
	-10	1255	38793	54409	1116	33749	46645	1069	32118	44186	1023	30511	41790	976	28928	39455
	-5	1265	44346	61970	1126	38505	53032	1080	36624	50208	1033	34773	47457	987	32954	44781
	0	1276	51773	71898	1136	44818	61371	1090	42590	58056	1044	40405	54833	997	38261	51701
	5	1286	62726	86215	1147	54033	73303	1100	51269	69255	1054	48569	65330	1007	45929	61523
	10	1296	79845	107913	1157	68212	91161	1110	64559	85953	1064	61010	80921	1017	57561	76061
1 5 5 0 0	-35	1191	24580	34600	1052	21399	29727	1006	20360	28176	959	19331	26660	913	18313	25181
	-30	1201	25689	36332	1062	22376	31214	1015	21294	29585	969	20224	27995	922	19164	26441
	-25	1210	27081	38454	1071	23596	33031	1025	22460	31307	978	21335	29622	932	20223	27979
	-20	1219	28822	41061	1080	25114	35256	1033	23905	33410	987	22712	31610	941	21532	29854
	-15	1228	31544	44960	1089	27471	38571	1042	26146	36542	996	24839	34564	949	23547	32634
	-10	1238	34780	49522	1099	30269	42450	1053	28807	40209	1006	27364	38023	960	25940	35892
	-5	1249	39316	55865	1109	34168	47818	1063	32505	45273	1016	30865	42791	970	29252	40376
	0	1259	45224	63998	1119	39216	54672	1073	37283	51728	1027	35383	48864	980	33515	46077
	5	1269	53644	75366	1129	46349	64189	1083	44017	60675	1037	41731	57261	990	39490	53946
	10	1279	66121	91775	1139	56798	77805	1093	53843	73437	1046	50959	69205	1000	48145	65107
1 5 0 0	-35	1179	22523	32042	1040	19603	27524	994	18648	26086	947	17701	24680	901	16763	23307
	-30	1189	23484	33578	1049	20450	28842	1003	19459	27335	957	18478	25864	910	17505	24426
	-25	1198	24684	35449	1059	21506	30446	1012	20467	28854	966	19439	27299	919	18421	25782
	-20	1207	26176	37733	1067	22808	32396	1021	21710	30700	974	20623	29043	928	19547	27426
	-15	1214	28513	41166	1075	24834	35313	1028	23636	33454	982	22452	31641	936	21281	29871
	-10	1222	31321	45247	1082	27258	38772	1036	25939	36719	990	24636	34717	943	23347	32762
	-5	1231	35077	50644	1092	30498	43346	1046	29014	41034	999	27549	38780	953	26105	36585
	0	1241	39854	57412	1102	34596	49061	1056	32898	46421	1009	31225	43849	963	29579	41348
	5	1251	46475	66636	1112	40237	56810	1066	38232	53712	1019	36262	50700	973	34327	47772
	10	1261	55891	79464	1122	48186	67513	1075	45725	63759	1029	43317	60118	982	40958	56585
1 4 5 0 0	-35	1167	20678	29724	1028	17988	25524	981	17107	24187	935	16234	22881	889	15368	21605
	-30	1176	21513	31089	1037	18728	26698	991	17816	25300	944	16912	23935	898	16016	22601
	-25	1185	22554	32748	1046	19644	28120	1000	18692	26647	953	17748	25208	907	16814	23804
	-20	1194	23841	34763	1055	20771	29841	1008	19767	28275	962	18773	26747	915	17789	25255
	-15	1201	25840	37762	1062	22507	32391	1016	21420	30685	969	20343	29018	923	19278	27393
	-10	1209	28217	41295	1069	24563	35387	1023	23374	33513	976	22197	31683	930	21034	29899
	-5	1216	31411	46034	1076	27316	39394	1030	25986	37290	983	24672	35237	937	23374	33237
	0	1224	35371	51824	1085	30720	44284	1038	29212	41896	992	27727	39571	945	26261	37306
	5	1233	40674	59440	1094	35257	50696	1048	33510	47935	1001	31788	45246	955	30095	42632
	10	1243	47970	69722	1104	41454	59307	1057	39362	56027	1011	37309	52841	964	35293	49746
1 4 0 0	-35	1155	19011	27607	1015	16528	23698	969	15714	22453	923	14907	21238	876	14105	20050
	-30	1164	19742	28828	1024	17176	24748	978	16335	23448	932	15502	22181	885	14674	20941
	-25	1173	20650	30306	1033	17976	26014	987	17101	24648	940	16232	23314	894	15372	22012
	-20	1181	21764	32089	1042	18955	27539	995	18035	26091	949	17124	24678	902	16220	23298
	-15	1188	23487	34728	1049	20453	29782	1002	19461	28210	956	18479	26676	910	17506	25178
	-10	1195	25514	37808	1056	22211	32397	1010	21133	30678	963	20065	29000	917	19010	27365
	-5	1202	28187	41877	1063	24519	35839	1016	23324	33923	970	22144	32055	924	20976	30234
	0	1209	31488	46856	1069	27359	40039	1023	26018	37880	977	24634	35776	930	23385	33725
	5	1215	35882	53390	1076	31122	45535	1030	29581	43052	983	28061	40633	937	26564	38280
	10	1225	41655	61795	1085	36048	52592	1039	34241	49690	993	32463	46867	946	30713	44121

Figure 4-28 (Sheet 15 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

7000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1142	17499	25666	1003	15202	22023	956	14447	20862	910	13699	19729	864	12957	18623
3	-30	1151	18140	26761	1012	15772	22964	965	14994	21755	919	14223	20574	872	13457	19421
5	-25	1160	18935	28082	1020	16473	24096	974	15666	22828	928	14865	21589	881	14070	20379
0	-20	1168	19906	29670	1029	17327	25453	982	16481	24111	936	15643	22802	889	14811	21523
0	-15	1175	21399	32003	1036	18627	27437	989	17718	25984	943	16819	24567	896	15927	23184
0	-10	1182	23139	34704	1043	20139	29731	996	19157	28150	950	18186	26608	903	17222	25102
	-5	1188	25394	38225	1049	22089	32709	1003	21011	30959	956	19943	29251	910	18887	27586
	0	1195	28137	42477	1056	24456	36301	1009	23256	34342	963	22071	32433	916	20898	30572
	5	1200	31758	48033	1061	27561	40973	1015	26198	38738	968	24852	36561	922	23524	34442
	10	1206	36501	55199	1067	31611	46982	1020	30028	44385	974	28469	41859	928	26933	39403
1	-35	1142	16046	23649	1003	13951	20323	956	13262	19263	910	12579	18229	864	11900	17218
3	-30	1145	16642	24736	1005	14469	21237	959	13755	20123	913	13047	19036	866	12343	17973
5	-25	1147	17383	26046	1007	15111	22340	961	14365	21160	914	13624	20007	868	12890	18883
0	-20	1155	18233	27465	1015	15859	23552	969	15080	22307	922	14307	21091	876	13540	19905
0	-15	1161	19532	29536	1022	16991	25312	976	16159	23970	929	15332	22658	883	14513	21379
0	-10	1168	21035	31918	1029	18299	27335	982	17402	25878	936	16514	24457	890	15634	23070
	-5	1175	22952	34986	1035	19959	29931	989	18981	28326	942	18011	26759	896	17052	25233
	0	1181	25252	38649	1042	21947	33025	995	20868	31241	949	19801	29502	902	18744	27806
	5	1186	28242	43370	1047	24518	36999	1000	23305	34980	954	22107	33014	907	20921	31098
	10	1191	32106	49404	1051	27824	42059	1005	26434	39737	959	25063	37476	912	23708	35275
1	-35	1151	14717	21701	1012	12820	18703	965	12196	17747	919	11575	16813	873	10959	15901
2	-30	1154	15224	22648	1014	13262	19501	968	12617	18498	922	11976	17518	875	11338	16560
5	-25	1155	15851	23788	1016	13807	20460	970	13136	19401	923	12467	18364	877	11805	17354
0	-20	1155	16626	25173	1016	14476	21622	969	13769	20491	923	13068	19387	877	12372	18310
0	-15	1150	17839	27251	1010	15509	23349	964	14745	22109	917	13986	20897	871	13234	19717
0	-10	1154	19158	29401	1015	16655	25169	969	15834	23824	922	15020	22512	876	14212	21231
	-5	1161	20796	32087	1021	18075	27441	975	17185	25967	928	16301	24527	882	15426	23124
	0	1167	22740	35265	1027	19757	30126	981	18782	28495	934	17816	26905	888	16860	25356
	5	1172	25233	39314	1032	21905	33535	986	20819	31704	939	19744	29918	893	18681	28179
	10	1176	28399	44410	1037	24621	37813	990	23390	35724	944	22175	33691	898	20974	31711
1	-35	1161	13545	19955	1022	11821	17250	975	11252	16386	929	10688	15543	882	10126	14718
2	-30	1163	13978	20784	1024	12200	17949	978	11615	17045	931	11032	16161	885	10454	15298
5	-25	1165	14515	21782	1026	12668	18789	979	12059	17834	933	11455	16903	886	10854	15992
0	-20	1165	15172	22986	1025	13235	19798	979	12599	18784	933	11966	17793	886	11337	16824
0	-15	1159	16188	24776	1020	14105	21291	973	13419	20180	927	12739	19097	880	12063	18039
0	-10	1153	17378	26850	1013	15118	23014	967	14377	21796	921	13641	20606	874	12910	19444
	-5	1146	18879	29474	1007	16398	25197	961	15585	23839	914	14777	22513	868	13977	21221
	0	1152	20531	32246	1013	17829	27538	966	16944	26044	920	16067	24587	874	15198	23167
	5	1157	22628	35745	1018	19638	30485	971	18659	28815	925	17691	27190	878	16731	25605
	10	1161	25249	40091	1022	21890	34134	976	20794	32247	929	19709	30408	883	18636	28618
1	-35	1171	12501	18379	1032	10929	15936	986	10411	15157	939	9895	14394	893	9382	13648
1	-30	1174	12876	19110	1034	11257	16551	988	10724	15736	942	10194	14939	895	9666	14158
5	-25	1175	13337	19985	1036	11661	17290	990	11109	16431	943	10559	15590	897	10014	14770
0	-20	1175	13899	21038	1036	12149	18175	989	11572	17262	943	10999	16371	896	10428	15498
0	-15	1169	14759	22594	1030	12885	19471	983	12268	18477	937	11656	17507	890	11046	16557
0	-10	1162	15755	24380	1023	13737	20960	977	13074	19872	930	12414	18809	884	11759	17771
	-5	1155	17014	26654	1015	14809	22848	969	14085	21639	923	13367	20460	876	12653	19308
	0	1147	18502	29330	1007	16074	25069	961	15278	23717	914	14487	22397	868	13704	21111
	5	1142	20351	32578	1003	17651	27773	956	16766	26249	910	15890	24764	863	15020	23316
	10	1146	22540	36315	1007	19535	30911	960	18551	29198	914	17579	27531	867	16614	25906
1	-35	1182	11563	16948	1043	10127	14742	996	9652	14037	950	9180	13347	904	8711	12674
1	-30	1184	11888	17593	1045	10413	15286	999	9926	14550	952	9441	13829	906	8959	13125
5	-25	1186	12289	18366	1047	10764	15938	1000	10260	15162	954	9760	14405	907	9261	13664
0	-20	1186	12773	19292	1046	11184	16715	1000	10661	15895	953	10139	15091	907	9622	14307
0	-15	1179	13507	20652	1040	11815	17851	994	11258	16960	947	10703	16087	901	10152	15235
0	-10	1173	14352	22206	1033	12538	19146	987	11941	18172	941	11348	17221	894	10757	16291
	-5	1165	15411	24172	1025	13442	20782	979	12796	19705	933	12153	18653	886	11513	17625
	0	1156	16648	26466	1017	14497	22689	970	13789	21488	924	13088	20317	878	12392	19176
	5	1142	18226	29403	1003	15829	25111	957	15043	23750	910	14262	22422	864	13488	21128
	10	1130	20189	32986	991	17484	28065	944	16598	26506	898	15720	24987	852	14850	23508



Figure 4-28 (Sheet 16 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

Figure 4-28 (Sheet 17 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

8000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1159	18749	27854	1020	16313	23901	973	15513	22642	927	14721	21414	881	13934	20214
3	-30	1167	19617	29275	1028	17076	25116	981	16243	23793	935	15417	22501	888	14597	21240
5	-25	1175	20600	30869	1035	17938	26478	989	17066	25082	942	16201	23718	896	15345	22389
0	-20	1182	21933	32989	1043	19103	28286	996	18176	26790	950	17258	25331	903	16348	23906
0	-15	1189	23636	35660	1050	20584	30557	1004	19587	28936	957	18598	27353	911	17620	25810
0	-10	1196	25726	38923	1057	22396	33325	1011	21310	31549	964	20234	29815	918	19170	28125
	-5	1203	28402	43086	1064	24708	36847	1018	23505	34868	971	22315	32939	925	21139	31059
	0	1210	31746	48238	1071	27584	41191	1024	26231	38959	978	24897	36786	931	23578	34669
	5	1217	36203	55019	1078	31401	46893	1031	29845	44324	985	28313	41824	938	26802	39392
	10	1226	41991	63648	1087	36339	54135	1041	34518	51137	994	32725	48220	948	30963	45387
1	-35	1151	17182	25741	1012	14948	22095	965	14213	20933	919	13485	19800	873	12762	18694
3	-30	1154	17975	27109	1014	15635	23248	968	14867	22019	922	14106	20821	875	13349	19650
5	-25	1161	18831	28528	1022	16387	24460	975	15585	23166	929	14790	21904	883	14002	20672
0	-20	1168	19987	30406	1029	17398	26061	983	16550	24680	936	15708	23331	890	14874	22016
0	-15	1176	21454	32758	1036	18675	28060	990	17766	26568	943	16864	25111	897	15971	23691
0	-10	1182	23232	35602	1043	20220	30474	997	19236	28847	950	18260	27258	904	17294	25709
	-5	1189	25476	39188	1050	22162	33509	1003	21080	31707	957	20010	29950	911	18951	28238
	0	1195	28236	43567	1056	24542	37205	1010	23339	35189	963	22150	33225	917	20974	31311
	5	1201	31886	49313	1062	27673	42036	1015	26304	39732	969	24954	37491	922	23620	35308
	10	1207	36593	56612	1068	31692	48154	1021	30106	45483	975	28544	42886	928	27004	40360
1	-35	1160	15692	23531	1021	13678	20255	974	13015	19211	928	12357	18191	882	11704	17196
2	-30	1156	16395	24832	1017	14278	21335	970	13582	20222	924	12891	19135	877	12204	18073
5	-25	1151	17207	26310	1012	14970	22562	966	14235	21369	919	13505	20205	873	12781	19069
0	-20	1155	18243	28062	1015	15867	24040	969	15088	22762	922	14314	21514	876	13548	20298
0	-15	1162	19512	30140	1022	16974	25807	976	16142	24431	929	15317	23087	883	14499	21777
0	-10	1168	21035	32634	1029	18299	27925	983	17403	26429	936	16515	24969	890	15635	23547
	-5	1175	22932	35747	1035	19942	30557	989	18965	28911	943	17997	27305	896	17038	25740
	0	1181	25233	39503	1042	21931	33730	995	20853	31899	949	19787	30116	902	18731	28377
	5	1186	28224	44360	1047	24503	37817	1000	23290	35743	954	22093	33726	907	20909	31761
	10	1191	32021	50460	1052	27754	42934	1005	26368	40555	959	25001	38239	912	23650	35985
1	-35	1170	14388	21566	1030	12564	18616	984	11964	17676	938	11368	16758	891	10775	15861
2	-30	1166	14978	22694	1026	13069	19553	980	12441	18553	933	11816	17575	887	11197	16622
5	-25	1161	15653	23965	1022	13646	20610	975	12985	19541	929	12330	18499	882	11678	17480
0	-20	1156	16572	25626	1017	14431	21992	970	13727	20836	924	13028	19707	877	12334	18606
0	-15	1150	17746	27694	1011	15432	23713	965	14673	22448	918	13918	21212	872	13171	20009
0	-10	1154	19084	29962	1015	16591	25628	968	15772	24249	922	14961	22906	875	14156	21596
	-5	1160	20696	32677	1021	17989	27924	974	17102	26415	928	16224	24945	882	15353	23511
	0	1166	22631	35924	1027	19663	30666	980	18692	28998	934	17731	27373	887	16779	25789
	5	1171	25108	40070	1032	21797	34156	985	20716	32282	939	19647	30457	892	18588	28678
	10	1176	28195	45196	1036	24446	38459	990	23226	36328	944	22020	34253	897	20827	32233
1	-35	1180	13235	19802	1041	11580	17146	994	11034	16299	948	10491	15470	902	9952	14662
1	-30	1176	13734	20786	1036	12006	17962	990	11437	17062	944	10872	16184	897	10309	15324
5	-25	1171	14301	21889	1032	12492	18880	985	11896	17921	939	11304	16985	892	10714	16069
0	-20	1166	15073	23326	1026	13151	20074	980	12520	19041	934	11892	18031	887	11267	17044
0	-15	1160	16051	25102	1021	13988	21555	974	13310	20427	928	12637	19327	882	11968	18252
0	-10	1154	17234	27237	1015	14998	23333	968	14263	22091	922	13535	20882	875	12810	19700
	-5	1147	18706	29888	1007	16249	25533	961	15444	24152	915	14646	22806	868	13852	21490
	0	1151	20357	32747	1012	17677	27944	965	16798	26419	919	15928	24934	872	15065	23487
	5	1156	22427	36316	1016	19461	30945	970	18492	29245	923	17531	27586	877	16580	25972
	10	1160	24964	40667	1021	21644	34601	974	20560	32681	928	19488	30811	882	18427	28991
1	-35	1191	12208	18211	1052	10700	15817	1005	10202	15052	959	9707	14305	912	9214	13574
1	-30	1186	12631	19071	1047	11063	16532	1001	10546	15722	954	10031	14929	908	9519	14155
5	-25	1181	13112	20036	1042	11474	17332	996	10935	16471	949	10397	15628	903	9864	14806
0	-20	1176	13766	21287	1037	12035	18375	990	11464	17447	944	10897	16541	897	10333	15655
0	-15	1170	14590	22826	1031	12741	19658	984	12132	18650	938	11527	17665	892	10926	16705
0	-10	1164	15579	24664	1024	13586	21190	978	12931	20085	931	12280	19007	885	11633	17954
	-5	1156	16795	26927	1017	14624	23073	970	13910	21847	924	13203	20654	878	12500	19489
	0	1147	18256	29635	1008	15865	25318	962	15081	23949	915	14302	22613	869	13530	21312
	5	1139	20095	33000	1000	17426	28108	954	16552	26559	907	15685	25048	861	14826	23577
	10	1144	22203	36729	1005	19241	31240	958	18272	29502	912	17313	27810	865	16362	26162

Figure 4-28 (Sheet 18 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES **FLAPS - 15⁰**
ANTI - ICE SYSTEMS ON **9000 FEET****CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE**

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			HEADWIND								
		10 KTS			WIND			10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 3 0 0	-35	1252	35381	49465	1112	30827	42478	1066	29352	40263	1019	27895	38101	973	26460	35995
	-30	1263	37740	52804	1124	32883	45340	1077	31311	42975	1031	29761	40668	985	28234	38421
	-25	1274	40455	56611	1135	35240	48596	1089	33556	46059	1042	31896	43585	996	30262	41176
	-20	1286	44854	62606	1146	39024	53685	1100	37147	50866	1054	35302	48122	1007	33485	45448
	-15	1297	50337	69963	1158	43717	59910	1111	41592	56738	1065	39507	53653	1018	37460	50654
	-10	1308	58423	80604	1169	50577	68849	1122	48073	65153	1076	45622	61564	1029	43222	58080
	-5	1319	70046	95523	1179	60329	81275	1133	57254	76820	1087	54256	72504	1040	51330	68322
	0	1330	88457	118472	1190	75530	100140	1144	71490	94456	1097	67573	88970	1051	63775	83677
	5	1340	121538	192979	1201	102102	158513	1155	96163	123970	1108	90466	116338	1062	84997	109028
	7				1205	118849	185427	1159	111577	172759	1112	104647	160781	1066	98037	149450
1 6 3 0 0	-35	1242	33276	46919	1103	28997	40287	1056	27607	38181	1010	26236	36128	963	24882	34126
	-30	1253	35398	49968	1114	30849	42902	1068	29375	40662	1021	27919	38476	975	26485	36347
	-25	1264	37825	53427	1125	32961	45864	1079	31387	43467	1032	29835	41131	986	28306	38855
	-20	1276	41723	58825	1136	36323	50453	1090	34581	47805	1044	32866	45226	997	31176	42712
	-15	1287	46526	65381	1147	40446	56009	1101	38491	53051	1055	36569	50170	1008	34680	47368
	-10	1298	53492	74718	1158	46380	63875	1112	44103	60461	1065	41870	57141	1019	39681	53917
	-5	1308	63271	87531	1169	54632	74592	1123	51885	70534	1076	49200	66597	1030	46576	62780
	0	1319	78228	106615	1180	67081	90379	1133	63573	85321	1087	60162	80431	1041	56844	75704
	5	1330	103548	137765	1190	87705	115691	1144	82806	108899	1098	78081	102369	1051	73519	96088
	7	1334	118996	192866	1195	100018	158291	1148	94211	122505	1102	88637	114958	1055	83282	107725
1 5 5 0 0	-35	1225	30122	43069	1086	26246	36965	1040	24985	35027	993	23739	33136	947	22508	31292
	-30	1237	31914	45710	1097	27815	39234	1051	26483	37179	1004	25167	35173	958	23868	33218
	-25	1248	33946	48684	1108	29589	41783	1062	28175	39595	1016	26781	37462	969	25403	35381
	-20	1259	37168	53263	1119	32378	45684	1073	30828	43284	1027	29300	40945	980	27793	38666
	-15	1270	41073	58742	1130	35746	50341	1084	34027	47684	1037	32333	45095	991	30666	42575
	-10	1280	46596	66372	1141	40478	56792	1095	38510	53767	1048	36575	50824	1002	34675	47962
	-5	1291	54104	76541	1152	46860	65339	1105	44541	61812	1059	42270	58389	1012	40042	55061
	0	1301	65047	91041	1162	56065	77428	1116	53214	73165	1069	50428	69031	1023	47708	65026
	5	1312	82233	113133	1173	70301	95622	1126	66557	90180	1080	62923	84926	1033	59392	79851
	10	1322	112275	188650	1183	94562	125385	1136	89119	117836	1090	83887	110597	1044	78851	103651
1 5 0 0	-35	1212	27271	39482	1073	23764	33885	1027	22622	32107	980	21490	30371	934	20372	28678
	-30	1221	28845	41890	1082	25139	35944	1035	23931	34054	989	22739	32213	942	21558	30414
	-25	1231	30591	44527	1091	26663	38200	1045	25386	36193	998	24124	34234	952	22877	32324
	-20	1241	33285	48454	1102	29004	41552	1056	27614	39363	1009	26242	37229	963	24888	35149
	-15	1252	36507	53097	1113	31792	45503	1066	30264	43098	1020	28759	40755	974	27274	38471
	-10	1263	40966	59440	1123	35627	50877	1077	33904	48170	1031	32208	45535	984	30537	42969
	-5	1273	46868	67694	1134	40674	57840	1087	38682	54731	1041	36725	51708	995	34803	48769
	0	1283	55147	79069	1144	47694	67375	1098	45312	63699	1051	42977	60129	1005	40691	56665
	5	1294	67437	95543	1154	57994	81060	1108	55002	76532	1062	52084	72148	1015	49235	67901
	10	1304	87093	120896	1165	74185	101836	1118	70151	95931	1072	66242	90237	1025	62450	84744
1 4 5 0 0	-35	1199	24763	36283	1060	21577	31135	1014	20537	29499	967	19507	27902	921	18487	26343
	-30	1208	26102	38383	1069	22750	32932	1022	21655	31199	976	20573	29509	929	19501	27860
	-25	1216	27606	40728	1077	24063	34935	1030	22908	33095	984	21766	31301	938	20637	29551
	-20	1224	29936	44240	1085	26084	37922	1038	24829	35916	992	23591	33961	946	22367	32055
	-15	1234	32634	48235	1095	28424	41324	1049	27057	39134	1002	25706	36997	956	24374	34917
	-10	1245	36286	53579	1105	31576	45859	1059	30051	43416	1013	28547	41036	966	27063	38716
	-5	1255	41013	60398	1116	35636	51626	1069	33900	48854	1023	32192	46156	976	30509	43530
	0	1265	47441	69544	1126	41120	59321	1079	39088	56098	1033	37094	52966	987	35135	49923
	5	1275	56575	82287	1136	48842	69968	1090	46374	66102	1043	43956	62348	997	41590	58708
	10	1285	70285	100800	1146	60286	85289	1100	57126	80450	1053	54045	75766	1007	51043	71237
1 4 0 0	-35	1186	22546	33419	1047	19640	28671	1001	18690	27162	954	17747	25687	908	16814	24249
	-30	1195	23694	35265	1055	20646	30249	1009	19650	28655	963	18664	27100	916	17687	25582
	-25	1203	24975	37313	1063	21767	32000	1017	20720	30312	971	19684	28666	924	18657	27059
	-20	1211	26942	40352	1071	23477	34586	1025	22348	32757	978	21230	30971	932	20125	29230
	-15	1218	29253	43888	1079	25481	37591	1033	24253	35594	986	23039	33646	940	21840	31748
	-10	1226	32332	48546	1087	28140	41539	1041	26779	39319	994	25434	37155	948	24107	35047
	-5	1237	36178	54263	1097	31454	46380	1051	29924	43886	1004	28416	41458	958	26929	39094
	0	1247	41273	61760	1107	35820	52703	1061	34061	49843	1014	32329	47061	968	30626	44356
	5	1256	48261	71890	1117	41767	61201	1071	39683	57836	1024	37636	54567	978	35626	51391
	10	1266	58262	85992	1127	50195	72946	1081	47625	68858	1034	45109	64893	988	42648	61050

Figure 4-28 (Sheet 19 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

9000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1	-35	1173	20572	30839	1034	17912	26448	988	17041	25053	941	16176	23689	895	15320	22360
3	-30	1181	21561	32467	1042	18781	27842	996	17871	26372	949	16968	24936	903	16075	23537
5	-25	1189	22659	34267	1050	19743	29380	1003	18789	27827	957	17845	26312	911	16909	24834
0	-20	1197	24333	36917	1058	21202	31637	1011	20178	29959	965	19166	28324	918	18162	26727
0	-15	1204	26281	39974	1065	22894	34236	1019	21789	32414	972	20695	30638	926	19614	28907
0	-10	1212	28855	43984	1072	25120	37633	1026	23904	35620	979	22701	33656	933	21514	31745
	-5	1219	32089	48966	1079	27905	41843	1033	26547	39588	987	25206	37391	940	23881	35251
	0	1228	36221	55259	1088	31456	47154	1042	29914	44592	995	28393	42098	949	26894	39671
	5	1237	41690	63484	1098	36135	54073	1052	34343	51104	1005	32580	48218	959	30845	45411
	10	1247	49232	74563	1108	42535	63341	1061	40387	59812	1015	38279	56385	968	36210	53059
1	-35	1160	18802	28496	1021	16360	24430	974	15559	23136	928	14764	21874	881	13975	20641
3	-30	1168	19659	29941	1028	17114	25666	982	16280	24307	936	15453	22981	889	14632	21686
5	-25	1175	20605	31530	1036	17945	27024	990	17074	25593	943	16210	24195	897	15353	22831
0	-20	1183	22040	33855	1044	19197	29004	997	18266	27462	951	17344	25959	904	16430	24492
0	-15	1190	23694	36516	1051	20637	31268	1004	19636	29600	958	18647	27975	912	17667	26390
0	-10	1197	25852	39969	1058	22506	34194	1011	21414	32362	965	20334	30576	919	19266	28836
	-5	1204	28521	44203	1065	24812	37776	1018	23604	35739	972	22410	33754	926	21230	31821
	0	1210	31939	49602	1071	27751	42327	1025	26391	40025	978	25047	37781	932	23722	35600
	5	1218	36367	56525	1078	31543	48146	1032	29982	45499	986	28443	42924	939	26926	40420
	10	1227	42199	65434	1088	36520	55622	1041	34589	52529	995	32888	49523	949	31118	46604
1	-35	1152	17170	26249	1013	14938	22511	966	14205	21322	920	13478	20162	873	12755	19028
2	-30	1154	17952	27644	1015	15616	23686	968	14849	22428	922	14089	21201	875	13333	20001
5	-25	1161	18771	29053	1022	16337	24891	976	15539	23569	929	14746	22277	883	13960	21018
0	-20	1169	20008	31104	1029	17416	26635	983	16567	25217	937	15726	23833	890	14890	22481
0	-15	1176	21423	33435	1036	18649	28618	990	17742	27090	944	16842	25598	897	15950	24143
0	-10	1183	23246	36430	1043	20232	31158	997	19247	29486	951	18272	27855	904	17305	26265
	-5	1189	25472	40063	1050	22159	34233	1004	21078	32385	957	20008	30583	911	18949	28828
	0	1195	28273	44629	1056	24573	38084	1010	23369	36013	963	22178	33994	917	21001	32028
	5	1201	31865	50457	1062	27656	42984	1015	26289	40621	969	24940	38321	923	23608	36083
	10	1207	36567	57948	1068	31671	49262	1021	30087	46521	975	28526	43855	928	26987	41263
1	-35	1161	15627	23919	1022	13624	20572	975	12965	19506	929	12310	18465	883	11661	17450
2	-30	1157	16313	25229	1018	14209	21659	971	13517	20524	925	12831	19416	879	12150	18335
5	-25	1153	17087	26690	1013	14868	22872	967	14140	21659	920	13416	20475	874	12698	19319
0	-20	1154	18194	28614	1015	15826	24493	969	15049	23184	922	14277	21906	876	13512	20661
0	-15	1161	19411	30667	1022	16887	26238	976	16060	24832	929	15239	23460	883	14425	22122
0	-10	1168	20962	33281	1029	18235	28454	982	17342	26923	936	16457	25429	889	15579	23972
	-5	1174	22833	36421	1035	19858	31113	989	18885	29430	942	17921	27788	896	16966	26189
	0	1180	25153	40320	1041	21862	34404	994	20787	32529	948	19724	30702	902	18672	28923
	5	1186	28074	45222	1046	24373	38526	1000	23169	36408	954	21978	34346	907	20800	32337
	10	1191	31830	51437	1051	27589	43739	1005	26213	41308	959	24855	38942	912	23513	36640
1	-35	1171	14285	21855	1032	12478	18852	985	11882	17894	939	11291	16960	893	10704	16048
1	-30	1167	14856	22986	1028	12966	19791	981	12344	18774	935	11726	17781	888	11111	16811
5	-25	1162	15494	24239	1023	13511	20832	977	12859	19749	930	12211	18691	884	11567	17658
0	-20	1157	16457	26011	1018	14335	22309	972	13637	21132	925	12944	19983	879	12256	18863
0	-15	1152	17573	28040	1013	15287	23998	966	14535	22713	920	13791	21462	873	13050	20239
0	-10	1153	18944	30457	1013	16467	26028	967	15655	24622	921	14850	23252	874	14050	21915
	-5	1159	20530	33191	1020	17844	28342	973	16963	26803	927	16092	25304	880	15227	23843
	0	1165	22468	36546	1025	19520	31174	979	18556	29471	933	17602	27813	886	16655	26196
	5	1170	24868	40710	1031	21590	34679	984	20519	32769	938	19460	30909	891	18411	29098
	10	1175	27899	45908	1035	24190	39040	989	22983	36870	943	21790	34757	896	20610	32701
1	-35	1182	13103	20012	1042	11466	17312	996	10927	16452	949	10390	15611	903	9857	14790
1	-30	1177	13582	20994	1038	11877	18129	991	11315	17216	945	10757	16326	899	10201	15454
5	-25	1172	14115	22078	1033	12333	19030	987	11746	18060	940	11162	17112	894	10582	16187
0	-20	1167	14922	23608	1028	13024	20306	981	12399	19255	935	11779	18231	889	11162	17230
0	-15	1162	15846	25345	1022	13814	21754	976	13146	20613	929	12482	19498	883	11823	18412
0	-10	1155	17029	27550	1016	14823	23588	969	14098	22330	923	13379	21103	876	12665	19907
	-5	1148	18460	30193	1008	16041	25785	962	15248	24387	916	14461	23024	869	13679	21695
	0	1148	20134	33215	1009	17480	28319	963	16611	26768	916	15748	25254	870	14894	23782
	5	1153	22126	36784	1014	19200	31323	968	18243	29594	921	17294	27909	875	16355	26269
	10	1158	24603	41181	1019	21330	35015	972	20260	33063	926	19203	31164	879	18156	29316



Figure 4-28 (Sheet 20 of 22)

CONDITIONS: REFER TO PAGE PRECEEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND			ZERO WIND			HEADWIND								
		10 KTS						10KTS			20KTS			30KTS		
		FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT	FIRST FT	SECOND FT	THIRD FT
1 6 3 0 0	-35	1273	40665	56899	1134	35412	48828	1087	33715	46272	1041	32044	43782	994	30398	41356
	-30	1285	43599	61022	1145	37955	52350	1099	36135	49607	1052	34344	46935	1006	32584	44336
	-25	1296	47496	66380	1157	41312	56907	1110	39322	53914	1064	37369	51003	1018	35449	48170
	-20	1308	53071	73845	1168	46077	63219	1122	43837	59871	1075	41640	56617	1029	39485	53453
	-15	1319	60427	83512	1180	52321	71351	1133	49736	67530	1087	47209	63821	1040	44734	60220
	-10	1330	71917	98265	1191	61962	83646	1144	58813	79075	1098	55744	74648	1052	52752	70361
	-5	1341	88842	119341	1202	75953	101001	1156	71924	95312	1109	68017	89820	1063	64228	8452
1 6 0 0 0	0	1352	120404	189669	1213	101372	131518	1167	95548	123662	1120	89957	116134	1074	84586	108919
	2				1217	117137	181154	1171	110078	169023	1125	103344	157532	1078	96913	146642
	-35	1263	38014	53688	1124	33116	46074	1077	31530	43660	1031	29969	41310	984	28428	39017
	-30	1274	40616	57410	1135	35378	49259	1089	33686	46679	1042	32019	44164	996	30378	41716
	-25	1286	44046	62210	1147	38342	53349	1100	36502	50546	1054	34694	47818	1007	32914	45162
	-20	1297	48897	68824	1158	42504	58956	1112	40450	55841	1065	38433	52812	1019	36452	49865
	-15	1309	55204	77274	1169	47879	66084	1123	45536	62651	1076	43240	59138	1030	40989	55813
1 5 5 0 0	-10	1320	64832	89902	1180	56005	76652	1134	53200	72498	1088	50461	68471	1041	47783	64563
	-5	1331	78558	107404	1191	67447	91160	1145	63950	86098	1099	60549	81203	1052	57238	76467
	0	1342	102756	137275	1202	87204	115492	1156	82390	108783	1110	77743	102328	1063	73256	96119
	2	1346	117306	188456	1207	98844	129440	1160	93184	121715	1114	87747	114309	1067	82519	107206
	6				1213	123617	195554	1167	115990	182105	1120	108733	169403	1074	101822	157401
	6													1076	110443	171206
	1 5 0 0 0	-35	1246	34116	48917	1107	29730	41973	1060	28306	39770	1014	26902	37623	968	25516
-30		1258	36270	52088	1118	31609	44690	1072	30099	42346	1025	28609	40061	979	27141	37835
-25		1269	39075	56129	1130	34044	48142	1083	32416	45613	1037	30814	43151	990	29233	40750
-20		1280	42979	61611	1141	37411	52805	1094	35614	50019	1048	33847	47309	1002	32108	44670
-15		1291	47946	68480	1152	41671	58622	1105	39653	55510	1059	37671	52484	1013	35725	49541
-10		1302	55295	78455	1163	47921	67015	1116	45563	63415	1070	43253	59919	1024	40988	56523
-5		1313	65325	91740	1174	56373	78115	1127	53529	73846	1081	50753	69708	1034	48040	65696
1 5 0 0 0	0	1324	81798	112994	1184	70047	95658	1138	66358	90267	1092	62775	85060	1045	59292	80028
	5	1334	109619	182222	1195	92605	123530	1149	87364	116199	1102	82318	109160	1056	77458	102402
	6	1336	117646	196315	1197	98989	161132	1151	93275	123319	1104	87786	115745	1058	82512	108486
	-35	1229	30740	44733	1090	26787	38367	1043	25500	36346	997	24231	34376	951	22976	32455
	-30	1240	32541	47460	1101	28364	40709	1055	27008	38568	1008	25668	36480	962	24345	34444
	-25	1251	34865	50904	1112	30388	43655	1066	28937	41359	1019	27504	39119	973	26091	36937
	-20	1262	38057	55517	1123	33152	47586	1077	31566	45076	1030	30001	42629	984	28459	40247
1 4 0 0 0	-15	1273	42047	61204	1134	36591	52417	1088	34831	49639	1041	33097	46934	995	31392	44302
	-10	1284	47801	69276	1145	41515	59234	1098	39494	56066	1052	37509	52985	1006	35560	49991
	-5	1295	55393	79703	1156	47964	67994	1109	45588	64312	1063	43262	60737	1016	40981	57265
	0	1305	67198	95591	1166	57878	81221	1120	54924	76726	1073	52040	72371	1027	49225	68152
	5	1316	85533	119424	1177	73029	100811	1130	69114	95035	1084	65318	89464	1037	61632	84085
	10	1326	118622	207103	1187	98624	169163	1140	93811	125538	1094	88234	117745	1048	82876	110278
	-35	1215	27721	40890	1075	24157	35065	1029	22996	33216	983	21848	31412	936	20711	29651
1 4 0 0 0	-30	1223	29293	43365	1084	25531	37181	1038	24306	35218	991	23095	33303	945	21898	31437
	-25	1234	31255	46360	1094	27241	39741	1048	25937	37643	1002	24649	35597	955	23376	33603
	-20	1244	33899	50289	1105	29540	43096	1059	28126	40817	1012	26729	38595	966	25351	36430
	-15	1255	37158	55071	1116	32359	47165	1070	30806	44664	1023	29273	42225	977	27764	39852
	-10	1266	41759	61731	1127	36315	52805	1080	34558	49985	1034	32829	47240	987	31127	44569
	-5	1276	47671	70133	1137	41368	59891	1091	39343	56663	1044	37353	53523	998	35399	50472
	0	1287	56450	82438	1147	48804	70194	1101	46363	66349	1055	43972	62616	1008	41629	58994
1 4 0 0 0	5	1297	69274	99908	1158	59539	84691	1111	56457	79936	1065	53453	75336	1018	50523	70882
	10	1307	90269	127317	1168	76790	107106	1121	72587	100854	1075	68517	94829	1029	64575	89025
	-35	1201	25064	37444	1062	21841	32105	1016	20789	30410	969	19747	28755	923	18716	27141
	-30	1210	26392	39593	1070	23003	33942	1024	21898	32149	978	20805	30399	931	19722	28692
	-25	1218	28079	42261	1079	24475	36219	1032	23300	34302	986	22139	32432	939	20990	30609
	-20	1226	30351	45756	1087	26445	39192	1041	25175	37111	994	23919	35081	948	22680	33105
	-15	1237	33046	49825	1097	28784	42659	1051	27401	40390	1005	26035	38178	958	24686	36022
1 4 0 0 0	-10	1247	36785	55403	1108	32011	47392	1061	30465	44857	1015	28942	42390	969	27440	39988
	-5	1258	41487	62308	1118	36049	53230	1072	34294	50363	1025	32567	47574	979	30867	44861
	0	1268	48204	72098	1128	41775	61459	1082	39711	58108	1036	37685	54854	989	35693	51689
	5	1278	57570	85439	1139	49690	72599	1092	47175	68570	1046	44715	64663	999	42305	60874
	10	1288	71906	105129	1149	61642	88876	1102	58400	83808	1056	55244	78909	1009	52168	74177

Figure 4-28 (Sheet 21 of 22)

SINGLE ENGINE TAKEOFF FLIGHT PATH DISTANCES

ANTI - ICE SYSTEMS ON

FLAPS - 15°

10.000 FEET

CONDITIONS: REFER TO PAGE PRECEDING THIS TABLE

WT LBS	TEMP DEG C	TAILWIND 10 KTS			ZERO WIND			10KTS			HEADWIND 20KTS			30KTS		
		FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD
		FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT	FT
1	-35	1188	22729	34374	1049	19801	29466	1002	18843	27906	956	17894	26384	909	16954	24900
3	-30	1196	23859	36253	1057	20792	31072	1010	19789	29427	964	18797	27822	917	17814	26256
5	-25	1204	25285	38569	1065	22039	33051	1018	20978	31298	972	19929	29589	926	18891	27923
0	-20	1212	27190	41581	1073	23695	35614	1026	22555	33721	980	21429	31876	933	20313	30075
0	-15	1220	29493	45184	1080	25690	38674	1034	24453	36611	988	23231	34601	941	22022	32640
0	-10	1228	32617	50005	1089	28390	42761	1042	27016	40466	996	25661	38232	950	24324	36056
	-5	1238	36418	55766	1099	31666	47641	1053	30128	45072	1006	28610	42570	960	27115	40136
	0	1248	41675	63722	1109	36170	54345	1063	34395	51387	1016	32646	48508	970	30927	45711
	5	1258	48741	74223	1119	42181	63148	1073	40076	59664	1026	38009	56280	980	35981	52995
	10	1268	59034	89049	1129	50850	75487	1082	48243	71239	1036	45694	67123	990	43200	63134
1	-35	1174	20660	31618	1035	17990	27094	988	17115	25656	942	16248	24254	896	15388	22885
3	-30	1182	21628	33270	1043	18841	28508	996	17928	26994	950	17024	25518	904	16128	24078
5	-25	1190	22843	35296	1051	19904	30237	1004	18942	28629	958	17991	27063	911	17047	25534
0	-20	1198	24453	37909	1058	21307	32462	1012	20279	30733	966	19262	29048	919	18254	27404
0	-15	1205	26379	41007	1066	22980	35095	1019	21871	33220	973	20775	31393	927	19690	29612
0	-10	1212	28983	45154	1073	25233	38610	1027	24012	36536	980	22804	34514	934	21612	32546
	-5	1219	32167	50160	1080	27976	42840	1034	26615	40524	987	25271	38268	941	23944	36071
	0	1229	36378	56776	1089	31594	48420	1043	30046	45781	996	28519	43211	950	27015	40713
	5	1238	41841	65233	1099	36267	55530	1053	34470	52471	1006	32701	49497	960	30961	46607
	10	1248	49506	76778	1109	42772	65184	1062	40611	61539	1016	38493	58002	969	36413	54569
1	-35	1160	18815	29127	1021	16372	24949	974	15570	23620	928	14775	22325	882	13987	21061
2	-30	1168	19648	30586	1029	17105	26196	982	16271	24802	936	15445	23442	889	14625	22115
5	-25	1176	20689	32367	1036	18017	27716	990	17143	26240	943	16275	24799	897	15415	23394
0	-20	1183	22060	34649	1044	19215	29662	997	18283	28077	951	17361	26534	905	16447	25028
0	-15	1190	23684	37333	1051	20629	31944	1005	19631	30235	958	18641	28567	912	17662	26942
0	-10	1197	25855	40890	1058	22510	34959	1012	21419	33079	965	20338	31245	919	19270	29460
	-5	1204	28470	45129	1065	24770	38546	1019	23565	36461	972	22373	34429	926	21196	32451
	0	1211	31922	50771	1071	27737	43297	1025	26379	40935	979	25037	38634	932	23712	36394
	5	1218	36300	57840	1079	31488	49237	1032	29930	46522	986	28395	43880	939	26881	41311
	10	1227	42168	67061	1088	36495	56971	1042	34667	53793	995	32868	50705	949	31099	47705
1	-35	1152	17114	26731	1013	14892	22906	967	14162	21691	920	13437	20504	874	12718	19347
2	-30	1154	17878	28153	1014	15552	24102	968	14788	22814	922	14031	21559	875	13279	20334
5	-25	1161	18775	29726	1022	16339	25444	975	15540	24084	929	14748	22758	883	13962	21465
0	-20	1168	19949	31730	1029	17366	27152	983	16519	25698	936	15679	24280	890	14847	22898
0	-15	1175	21330	34072	1036	18569	29143	990	17666	27579	943	16769	26053	897	15882	24567
0	-10	1182	23155	37146	1043	20154	31750	997	19173	30039	950	18200	28369	904	17238	26744
	-5	1189	25327	40772	1050	22034	34819	1003	20959	32932	957	19896	31094	910	18842	29302
	0	1195	28129	45516	1056	24450	38818	1009	23252	36698	963	22067	34633	917	20897	32625
	5	1201	31637	51410	1062	27463	43773	1015	26106	41358	969	24768	39010	923	23447	36726
	10	1206	36341	59143	1067	31478	50248	1021	29905	47443	974	28353	44714	928	26825	42064
1	-35	1162	15524	24281	1023	13537	20868	976	12882	19781	930	12233	18721	883	11587	17685
1	-30	1158	16182	25590	1019	14098	21955	972	13412	20798	926	12733	19672	879	12056	18570
5	-25	1154	17012	27180	1014	14806	23277	968	14082	22038	922	13363	20829	875	12648	19648
0	-20	1153	18074	29100	1014	15721	24889	968	14949	23552	921	14181	22247	875	13421	20976
0	-15	1160	19255	31154	1021	16751	26635	974	15930	25201	928	15116	23803	882	14308	22439
0	-10	1167	20801	33829	1027	18094	28902	981	17208	27340	935	16330	25817	888	15458	24332
	-5	1173	22620	36955	1034	19672	31549	987	18708	29836	941	17753	28166	895	16807	26539
	0	1179	24922	40986	1040	21661	34949	993	20596	33037	947	19543	31175	901	18500	29362
	5	1185	27751	45919	1046	24096	39098	999	22905	36940	953	21729	34842	906	20565	32798
	10	1190	31472	52286	1050	27282	44436	1004	25921	41957	957	24578	39546	911	23252	37201
1	-35	1172	14146	22121	1033	12359	19066	986	11770	18093	940	11185	17143	893	10603	16216
1	-30	1168	14690	23248	1029	12825	20003	982	12210	18970	936	11600	17963	889	10993	16979
5	-25	1163	15374	24609	1024	13410	21137	978	12763	20032	931	12121	18955	885	11483	17903
0	-20	1158	16277	26328	1019	14181	22569	973	13492	21375	926	12808	20210	880	12129	19074
0	-15	1153	17350	28344	1014	15097	24248	967	14356	22947	921	13622	21679	874	12892	20442
0	-10	1150	18733	30872	1011	16281	26361	965	15478	24931	918	14679	23535	872	13889	22178
	-5	1157	20270	33587	1017	17615	28659	971	16746	27098	925	15884	25576	878	15029	24092
	0	1162	22178	37041	1023	19267	31574	977	18315	29842	930	17371	28155	884	16436	26512
	5	1168	24487	41215	1029	21258	35085	982	20204	33146	936	19161	31259	889	18127	29420
	10	1172	27470	46520	1033	23819	39536	987	22630	37330	940	21453	35180	894	20291	33092



Figure 4-28 (Sheet 22 of 22)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS														
		16300					16000					15500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	4.5	5.3	5.6	5.9	6.3	4.8	5.6	5.9	6.3	6.6	5.3	6.2	6.5	6.9	7.3
	-20	4.5	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.1	6.5	6.9	7.3
	-15	4.5	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-10	4.6	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-5	4.6	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	0	4.6	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.1	6.5	6.8	7.2
	5	4.6	5.3	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.1	6.5	6.8	7.2
	10	4.5	5.2	5.5	5.8	6.1	4.8	5.6	5.9	6.2	6.5	5.3	6.1	6.4	6.8	7.2
	15	4.5	5.2	5.5	5.8	6.1	4.8	5.5	5.8	6.2	6.5	5.3	6.1	6.4	6.8	7.2
	20	4.4	5.1	5.3	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	5.9	6.3	6.6	7.0
10	25	4.3	4.9	5.2	5.5	5.8	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.8
	30	3.8	4.4	4.6	4.8	5.1	4.0	4.7	4.9	5.2	5.5	4.5	5.2	5.5	5.8	6.1
	35	3.2	3.7	3.9	4.1	4.3	3.4	4.0	4.2	4.4	4.7	3.9	4.5	4.7	5.0	5.3
	40	2.6	3.0	3.2	3.3	3.5	2.8	3.3	3.4	3.6	3.9	3.2	3.7	4.0	4.2	4.4
	45	2.0	2.3	2.4	2.6	2.7	2.2	2.6	2.7	2.9	3.0	2.6	3.0	3.2	3.4	3.6
	50	1.3	1.6	1.7	1.8	1.9	1.6	1.8	2.0	2.1	2.2	1.9	2.3	2.4	2.6	2.7
	54	.8	1.0	1.1	1.2	1.2	1.0	1.2	1.3	1.4	1.5	1.4	1.6	1.7	1.9	2.0
	58	.4	.7	.8	.9	.9	.6	.8	.9	1.0	1.1	.9	1.1	1.2	1.3	1.4
	62	.1	.4	.5	.6	.6	.3	.5	.6	.7	.8	.6	.8	.9	1.0	1.1
	66	0	.1	.2	.3	.3	0	.2	.3	.4	.5	0	.2	.3	.4	.5
20	-25	4.7	5.4	5.7	6.0	6.4	4.9	5.7	6.1	6.4	6.8	5.4	6.3	6.7	7.0	7.5
	-20	4.7	5.4	5.7	6.0	6.4	4.9	5.7	6.1	6.4	6.8	5.4	6.3	6.6	7.0	7.4
	-15	4.7	5.4	5.7	6.0	6.4	5.0	5.7	6.0	6.4	6.8	5.4	6.3	6.6	7.0	7.4
	-10	4.7	5.4	5.7	6.0	6.4	5.0	5.7	6.0	6.4	6.8	5.5	6.3	6.6	7.0	7.4
	-5	4.7	5.4	5.7	6.0	6.4	5.0	5.7	6.0	6.4	6.8	5.5	6.3	6.6	7.0	7.4
	0	4.7	5.4	5.7	6.0	6.4	5.0	5.7	6.0	6.4	6.7	5.5	6.3	6.6	7.0	7.4
	5	4.7	5.4	5.7	6.0	6.3	5.0	5.7	6.0	6.4	6.7	5.5	6.3	6.6	7.0	7.4
	10	4.7	5.4	5.7	6.0	6.3	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.6	7.0	7.4
	15	4.6	5.2	5.5	5.8	6.1	4.8	5.6	5.8	6.2	6.5	5.3	6.1	6.4	6.8	7.2
	20	4.2	4.9	5.1	5.4	5.7	4.5	5.2	5.5	5.8	6.1	5.0	5.7	6.0	6.4	6.7
30	25	3.9	4.5	4.7	5.0	5.2	4.2	4.8	5.0	5.3	5.6	4.6	5.3	5.6	5.9	6.2
	30	3.3	3.8	4.0	4.2	4.5	3.6	4.1	4.3	4.5	4.8	4.0	4.6	4.8	5.1	5.4
	35	2.7	3.2	3.3	3.5	3.7	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6
	40	2.1	2.5	2.6	2.8	2.9	2.3	2.7	2.9	3.1	3.2	2.8	3.2	3.4	3.6	3.8
	45	1.5	1.8	1.9	2.0	2.2	1.7	2.0	2.2	2.3	2.4	2.1	2.5	2.6	2.8	2.9
	50	.9	1.1	1.2	1.3	1.4	1.1	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.1
	52	.6	.8	.9	1.0	1.0	.8	1.0	1.1	1.2	1.3	1.2	1.4	1.5	1.6	1.8
	54	.4	.6	.7	.8	.8	.6	.8	.9	1.0	1.1	.9	1.1	1.2	1.3	1.4
	56	.2	.4	.5	.6	.6	.4	.6	.7	.8	.9	.7	.9	1.0	1.1	1.2
	58	0	.2	.3	.4	.4	0	.3	.4	.5	.6	0	.3	.4	.5	.6
40	-25	4.8	5.6	5.9	6.2	6.6	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	-20	4.8	5.6	5.9	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	-15	4.8	5.6	5.9	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	-10	4.8	5.6	5.8	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	-5	4.8	5.6	5.9	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	0	4.8	5.6	5.9	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6
	5	4.8	5.6	5.8	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.1	7.5
	10	4.8	5.6	5.8	6.1	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.4	6.8	7.1	7.5
	15	4.4	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	20	3.9	4.5	4.8	5.0	5.3	4.2	4.8	5.1	5.4	5.6	4.7	5.4	5.6	5.9	6.3
50	25	3.4	3.9	4.1	4.3	4.6	3.7	4.2	4.4	4.7	4.9	4.1	4.7	5.0	5.2	5.5
	30	2.8	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.2	3.5	4.0	4.2	4.5	4.7
	35	2.3	2.6	2.8	2.9	3.1	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.5	3.7	3.9
	40	1.7	2.0	2.1	2.2	2.3	1.9	2.2	2.3	2.5	2.6	2.3	2.7	2.8	3.0	3.1
	45	1.1	1.3	1.4	1.5	1.6	1.3	1.6	1.7	1.8	1.9	1.7	2.0	2.1	2.2	2.4
	50	.5	.7	.7	.8	.9	.7	.9	1.0	1.1	1.1	1.1	1.3	1.4	1.5	1.6
	52	.3	.5	.6	.6	.7	.5	.7	.8	.9	.9	.9	1.1	1.2	1.3	1.4
	54	.2	.4	.5	.5	.6	.4	.6	.7	.8	.8	.8	1.0	1.1	1.2	1.3
	56	.1	.3	.4	.4	.5	.3	.5	.6	.7	.7	.7	.9	1.0	1.1	1.2
	58	0	.2	.3	.3	.4	0	.4	.5	.6	.6	0	.7	.8	.9	1.0
60	-25	4.9	5.7	6.0	6.3	6.7	5.2	6.0	6.3	6.7	7.1	5.7	6.6	7.0	7.3	7.8
	-20	4.9	5.7	6.0	6.3	6.7	5.2	6.0	6.3	6.7	7.1	5.7	6.6	6.9	7.3	7.7
	-15	4.9	5.7	6.0	6.3	6.6	5.2	6.0	6.3	6.7	7.0	5.7	6.6	6.9	7.3	7.7
	-10	4.9	5.7	6.0	6.3	6.6	5.2	6.0	6.3	6.7	7.0	5.7	6.6	6.9	7.3	7.7
	-5	4.9	5.7	6.0	6.3	6.6	5.2	6.0	6.3	6.6	7.0	5.7	6.6	6.9	7.3	7.7
	0	4.9	5.6	5.9	6.2	6.5	5.2	5.9	6.2	6.6	6.9	5.7	6.5	6.8	7.2	7.6
	5	4.8	5.5	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.7	7.0	7.4
	10	4.5	5.2	5.5	5.7	6.1	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.1
	15	4.0	4.6	4.8	5.1	5.4	4.3	4.9	5.2	5.4	5.7	4.7	5.4	5.7	6.0	6.3
	20	3.5	4.0	4.2	4.4	4.7	3.7	4.3	4.5	4.7	5.0	4.2	4.8	5.0	5.3	5.6
70	25	2.9	3.4	3.5	3.7	3.9	3.2	3.6	3.8	4.0	4.3	3.6	4.1	4.3	4.6	4.8
	30	2.3	2.7	2.9	3.0	3.2	2.6	3.0	3.2	3.3	3.5	3.0	3.5	3.6	3.8	4.1
	35	1.8	2.1	2.2	2.3	2.5	2.0	2.4	2.5	2.6	2.8	2.4	2.8	3.0	3.1	3.3
	40	1.2	1.5	1.6	1.7	1.8	1.5	1.7	1.8	1.9	2.1	1.8	2.1	2.3	2.4	2.5
	45	.7	.9	.9	1.0	1.1	.9	1.1	1.2	1.3	1.3	1.3	1.5	1.6	1.7	1.8
	48	.3	.4	.5	.5	.6	.5	.7	.7	.8	.8	.8	1.0	1.1	1.2	1.3
	50	.2	.3	.4	.4	.5	.4	.6	.6	.7	.7	.7	.9	1.0	1.1	1.2
	52	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.6	.8	.9	1.0	1.1
	54	0	.1	.2	.2	.3	0	.4	.4	.5	.5	0	.6	.7	.8	.9
	56	0	.1	.2	.2	.3	0	.4	.4	.5	.5	0	.6	.7	.8	.9

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-29 (Sheet 1 of 8)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	7.0	8.1	8.6	9.1	9.7	7.6	8.9	9.4	9.9	10.6	8.3	9.7	10.2	10.8	11.5	9.8	11.5	12.1	12.8	13.7	11.6	13.4	14.2	15.0	15.9
	-20	7.0	8.1	8.6	9.1	9.6	7.6	8.8	9.4	9.9	10.5	8.3	9.7	10.2	10.8	11.5	9.8	11.5	12.1	12.8	13.6	11.6	13.4	14.2	15.0	15.9
	-15	7.0	8.1	8.6	9.1	9.6	7.6	8.9	9.4	9.9	10.5	8.3	9.7	10.2	10.8	11.5	9.9	11.5	12.1	12.8	13.6	11.6	13.4	14.2	15.0	15.9
	-10	7.0	8.1	8.6	9.1	9.6	7.6	8.9	9.4	9.9	10.5	8.3	9.7	10.2	10.8	11.5	9.9	11.5	12.1	12.8	13.6	11.6	13.5	14.2	15.0	15.9
	-5	7.0	8.1	8.6	9.1	9.6	7.6	8.9	9.4	9.9	10.5	8.3	9.7	10.2	10.8	11.5	9.9	11.5	12.1	12.8	13.6	11.7	13.5	14.2	15.0	15.9
	0	7.0	8.1	8.5	9.0	9.6	7.6	8.8	9.3	9.9	10.5	8.3	9.7	10.2	10.8	11.4	9.9	11.4	12.1	12.8	13.5	11.7	13.4	14.1	14.9	15.8
	5	7.0	8.1	8.5	9.0	9.5	7.6	8.8	9.3	9.8	10.4	8.3	9.6	10.2	10.7	11.4	9.9	11.4	12.0	12.7	13.5	11.6	13.4	14.1	14.9	15.8
	10	7.0	8.1	8.5	9.0	9.5	7.6	8.8	9.3	9.8	10.4	8.3	9.6	10.1	10.7	11.4	9.9	11.4	12.0	12.7	13.4	11.6	13.4	14.1	14.9	15.7
	15	7.0	8.1	8.5	8.9	9.5	7.6	8.8	9.3	9.8	10.4	8.3	9.6	10.1	10.7	11.3	9.9	11.4	12.0	12.7	13.4	11.6	13.4	14.1	14.8	15.7
	20	6.8	7.9	8.3	8.7	9.2	7.5	8.6	9.1	9.6	10.1	8.1	9.4	9.9	10.5	11.1	9.7	11.2	11.8	12.4	13.2	11.5	13.2	13.8	14.6	15.4
	25	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.9	9.3	9.9	8.0	9.2	9.7	10.2	10.8	9.5	11.0	11.6	12.2	12.9	11.3	13.0	13.6	14.4	15.2
	30	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.1	7.4	8.5	8.9	9.4	10.0	8.8	10.2	10.7	11.4	12.0	10.6	12.2	12.8	13.5	14.3
	35	5.4	6.2	6.5	6.9	7.3	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.5	9.0	8.0	9.2	9.8	10.3	10.9	9.7	11.2	11.8	12.5	13.2
	40	4.7	5.4	5.7	6.0	6.4	5.2	6.0	6.4	6.7	7.1	5.8	6.7	7.1	7.5	7.9	7.1	8.3	8.7	9.2	9.8	8.7	10.1	10.7	11.3	12.0
	45	3.9	4.6	4.8	5.1	5.4	4.5	5.2	5.4	5.8	6.1	5.0	5.8	6.1	6.5	6.9	6.3	7.3	7.7	8.1	8.6	7.8	9.0	9.5	10.1	10.7
	50	3.2	3.7	4.0	4.2	4.4	3.7	4.3	4.6	4.8	5.1	4.2	4.9	5.2	5.5	5.8	5.4	6.3	6.7	7.1	7.5	6.9	8.0	8.4	8.9	9.5
	54	2.6	3.1	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.3	3.6	4.2	4.4	4.7	5.0	4.7	5.5	5.8	6.2	6.5	6.1	7.1	7.5	7.9	8.4
10	-25	7.1	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.4	9.8	10.4	11.0	11.7	10.0	11.6	12.3	13.0	13.8	11.8	13.6	14.4	15.2	16.1
	-20	7.1	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.5	9.8	10.4	11.0	11.7	10.0	11.6	12.3	13.0	13.8	11.8	13.6	14.3	15.2	16.1
	-15	7.1	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.5	9.8	10.4	11.0	11.7	10.1	11.6	12.3	13.0	13.8	11.8	13.6	14.3	15.1	16.0
	-10	7.1	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.5	9.8	10.4	11.0	11.7	10.1	11.6	12.3	13.0	13.7	11.8	13.6	14.3	15.1	16.0
	-5	7.2	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.5	9.8	10.4	11.0	11.6	10.1	11.6	12.3	13.0	13.7	11.8	13.6	14.3	15.1	16.0
	0	7.2	8.3	8.7	9.2	9.7	7.8	9.0	9.5	10.0	10.6	8.5	9.8	10.4	10.9	11.6	10.1	11.6	12.3	12.9	13.7	11.9	13.6	14.3	15.1	16.0
	5	7.2	8.3	8.7	9.2	9.7	7.8	9.0	9.5	10.0	10.6	8.5	9.8	10.3	10.9	11.6	10.1	11.6	12.2	12.9	13.7	11.9	13.6	14.3	15.1	15.9
	10	7.2	8.2	8.7	9.1	9.7	7.8	9.0	9.5	10.0	10.6	8.5	9.8	10.3	10.9	11.5	10.1	11.6	12.2	12.9	13.6	11.9	13.6	14.3	15.0	15.9
	15	7.0	8.1	8.5	8.9	9.5	7.6	8.8	9.3	9.8	10.3	8.3	9.6	10.1	10.7	11.3	9.9	11.4	12.0	12.7	13.4	11.7	13.4	14.1	14.8	15.6
	20	6.6	7.6	8.0	8.5	9.0	7.3	8.4	8.8	9.3	9.8	7.9	9.2	9.6	10.2	10.8	9.5	10.9	11.5	12.1	12.8	11.2	12.9	13.6	14.3	15.1
	25	6.2	7.2	7.5	7.9	8.4	6.8	7.9	8.3	8.7	9.2	7.5	8.6	9.1	9.6	10.1	9.0	10.4	10.9	11.5	12.2	10.7	12.3	13.0	13.7	14.4
	30	5.5	6.4	6.7	7.1	7.5	6.1	7.0	7.4	7.8	8.3	6.7	7.8	8.2	8.6	9.1	8.2	9.4	9.9	10.5	11.1	9.9	11.4	12.0	12.6	13.4
	35	4.8	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3	6.0	6.9	7.3	7.7	8.1	7.3	8.5	9.0	9.5	10.0	9.0	10.4	10.9	11.6	12.3
	40	4.1	4.8	5.0	5.3	5.6	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.4	6.7	7.1	6.5	7.5	8.0	8.4	8.9	8.0	9.3	9.8	10.4	11.0
	45	3.4	4.0	4.2	4.4	4.7	3.9	4.6	4.8	5.1	5.4	4.5	5.2	5.5	5.8	6.1	5.7	6.6	7.0	7.4	7.8	7.1	8.3	8.7	9.3	9.8
	50	2.7	3.2	3.4	3.6	3.8	3.2	3.8	4.0	4.2	4.4	3.7	4.3	4.6	4.9	5.1	4.9	5.7	6.0	6.3	6.7	6.3	7.3	7.7	8.1	8.6
	52	2.4	2.8	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.4	3.9	4.2	4.4	4.7	4.5	5.2	5.5	5.9	6.2	5.8	6.8	7.2	7.6	8.1
20	-25	7.3	8.4	8.9	9.4	10.0	7.9	9.2	9.7	10.3	10.9	8.6	10.0	10.6	11.2	11.9	10.2	11.8	12.5	13.2	14.0	12.0	13.8	14.5	15.3	16.2
	-20	7.3	8.4	8.9	9.4	10.0	7.9	9.2	9.7	10.2	10.9	8.6	10.0	10.6	11.2	11.8	10.2	11.8	12.5	13.2	13.9	12.0	13.8	14.5	15.3	16.2
	-15	7.3	8.4	8.9	9.4	9.9	7.9	9.2	9.7	10.2	10.8	8.6	10.0	10.5	11.2	11.8	10.2	11.8	12.4	13.1	13.9	12.0	13.8	14.5	15.3	16.2
	-10	7.3	8.4	8.9	9.4	9.9	8.0	9.2	9.7	10.2	10.8	8.7	10.0	10.5	11.1	11.8	10.3	11.8	12.4	13.1	13.9	12.0	13.8	14.5	15.3	16.2
	-5	7.3	8.4	8.9	9.4	9.9	8.0	9.2	9.7	10.2	10.8	8.7	10.0	10.5	11.1	11.8	10.3	11.8	12.4	13.1	13.9	12.0	13.8	14.5	15.3	16.1
	0	7.3	8.4	8.9	9.4	9.9	8.0	9.2	9.7	10.2	10.8	8.7	10.0	10.6	11.1	11.8	10.3	11.8	12.4	13.1	13.9	12.1	13.8	14.5	15.3	16.1
	5	7.3	8.4	8.9	9.3	9.9	8.0	9.2	9.7	10.2	10.8	8.7	10.0	10.5	11.1	11.8	10.3	11.8	12.4	13.1	13.8	12.1	13.8	14.5	15.3	16.1
	10	7.3	8.4	8.9	9.3	9.8	8.0	9.2	9.7	10.2	10.7	8.7	10.0	10.5	11.1	11.7	10.3	11.8	12.4	13.1	13.8	12.1	13.8	14.5	15.2	16.1
	15	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.1	9.6	10.1	8.2	9.4	9.9	10.4	11.0	9.8	11.2	11.8	12.4	13.1	11.5	13.2	13.8	14.6	15.4
	20	6.3	7.2	7.6	8.0	8.4	6.9	7.9	8.3	8.8	9.3	7.6	8.7	9.2	9.6	10.2	9.1	10.4	11.0	11.6	12.3	10.8	12.4	13.0	13.7	14.5
	25	5.6	6.5	6.8	7.2	7.6	6.2	7.2	7.5	8.0	8.4	6.9	7.9	8.3	8.8	9.3	8.3	9.6	10.1	10.6	11.3	10.0	11.5	12.1	12.8	13.5
	30	5.0	5.7	6.0	6.3	6.7	5.5	6.4	6.7	7.1	7.5	6.1	7.1	7.4	7.9	8.3	7.5	8.7	9.1	9.6	10.2	9.1	10.6	11.1	11.8	12.4
	35	4.3	5.0	5.2	5.5	5.8	4.8	5.6	5.9	6.2	6.5	5.4	6.2	6.6	6.9	7.3	6.7	7.8	8.2	8.6	9.1	8.3	9.6	10.1	10.7	11.3
	40	3.6	4.2	4.4	4.7	4.9	4.1	4.8	5.0	5.3	5.6	4.7	5.4	5.7	6.0	6.4	5.9	6.8	7.2	7.6	8.1	7.4	8.6	9.0	9.6	10.1
	45	2.9	3.4	3.6	3.8	4.0	3.4	4.0	4.2	4.4	4.7	4.0	4.6	4.8	5.1	5.4	5.1	5.9	6.3	6.6	7.0	6.5	7.6	8.0	8.5	9.0
	50	2.3	2.7	2.8	3.0	3.2	2.8	3.2	3.4	3.6	3.8	3.2	3.8	4.0	4.2	4.5	4.4	5.1	5.3	5.7	6.0	5.7	6.6	7.0	7.4	

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	5.0	5.8	6.1	6.5	6.8	5.3	6.1	6.5	6.8	7.2	5.8	6.7	7.1	7.5	7.9	6.4	7.3	7.7	8.2	8.6	6.9	8.0	8.4	8.9	9.4
	-25	5.0	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.1	7.4	7.9	6.4	7.3	7.7	8.1	8.6	6.9	8.0	8.4	8.9	9.4
	-20	5.1	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.6	7.0	8.0	8.4	8.9	9.4
	-15	5.1	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.9	6.7	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.6	7.0	8.0	8.4	8.9	9.4
	-10	5.1	5.8	6.1	6.4	6.8	5.4	6.1	6.4	6.8	7.1	5.9	6.7	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.6	7.0	8.0	8.4	8.8	9.3
	-5	5.1	5.8	6.1	6.4	6.7	5.4	6.1	6.4	6.8	7.1	5.9	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	0	4.8	5.5	5.8	6.1	6.4	5.1	5.9	6.2	6.5	6.8	5.6	6.4	6.8	7.1	7.5	6.2	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0
	5	4.6	5.2	5.5	5.8	6.1	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5
	10	4.1	4.7	4.9	5.2	5.5	4.4	5.0	5.3	5.5	5.8	4.9	5.6	5.8	6.1	6.5	5.4	6.1	6.4	6.8	7.1	5.9	6.8	7.1	7.5	7.9
	15	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.3	6.0	6.3	6.7	7.0
	20	3.0	3.4	3.6	3.8	4.0	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9	4.1	4.7	5.0	5.2	5.5	4.6	5.3	5.6	5.9	6.2
	25	2.4	2.8	3.0	3.1	3.3	2.7	3.1	3.2	3.4	3.6	3.1	3.6	3.7	3.9	4.2	3.5	4.1	4.3	4.5	4.7	4.0	4.6	4.8	5.1	5.4
	30	1.9	2.2	2.3	2.5	2.6	2.1	2.5	2.6	2.7	2.9	2.5	2.9	3.1	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6
	35	1.4	1.6	1.7	1.8	1.9	1.6	1.8	2.0	2.1	2.2	2.0	2.3	2.4	2.5	2.7	2.4	2.7	2.9	3.1	3.2	2.8	3.2	3.4	3.6	3.8
	40	.8	1.0	1.1	1.2	1.2	1.0	1.2	1.3	1.4	1.5	1.4	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.3	2.5	2.2	2.6	2.7	2.9	3.0
	45	.3	.4	.5	.5	.6	.5	.6	.7	.8	.8	.8	1.0	1.1	1.2	1.3	1.2	1.4	1.5	1.6	1.8	1.6	1.9	2.0	2.1	2.3
	46	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.7	.8	.9	1.0	1.1	1.0	1.3	1.3	1.4	1.5	1.4	1.7	1.8	1.9	2.0
5000	-35	5.2	6.0	6.3	6.7	7.0	5.5	6.3	6.7	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9	7.2	8.2	8.7	9.1	9.7
	-30	5.2	6.0	6.3	6.6	7.0	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.5	7.9	8.3	8.8	7.1	8.2	8.6	9.1	9.6
	-25	5.2	6.0	6.3	6.6	6.9	5.5	6.3	6.6	7.0	7.3	6.0	6.9	7.2	7.6	8.0	6.5	7.5	7.9	8.3	8.8	7.1	8.2	8.6	9.1	9.6
	-20	5.2	5.9	6.2	6.5	6.9	5.5	6.3	6.6	6.9	7.3	6.0	6.8	7.2	7.6	8.0	6.5	7.5	7.8	8.3	8.7	7.1	8.1	8.6	9.0	9.5
	-15	5.1	5.8	6.1	6.4	6.8	5.4	6.2	6.5	6.8	7.2	5.9	6.7	7.1	7.4	7.8	6.4	7.4	7.7	8.1	8.6	7.0	8.0	8.4	8.9	9.4
	-10	4.9	5.6	5.9	6.2	6.6	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.2	7.2	7.5	7.9	8.3	6.8	7.8	8.2	8.6	9.1
	-5	4.7	5.4	5.7	6.0	6.3	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.6	6.9	7.3	6.0	6.9	7.2	7.6	8.0	6.6	7.6	7.9	8.3	8.8
	0	4.4	5.1	5.3	5.6	5.9	4.7	5.4	5.6	5.9	6.2	5.2	5.9	6.2	6.5	6.9	5.7	6.5	6.8	7.2	7.6	6.2	7.1	7.5	7.9	8.3
	5	4.1	4.7	4.9	5.2	5.5	4.4	5.0	5.2	5.5	5.8	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.1	5.9	6.7	7.1	7.4	7.8
	10	3.6	4.1	4.3	4.5	4.8	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7	4.8	5.5	5.7	6.0	6.3	5.3	6.0	6.3	6.7	7.0
	15	3.0	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.7	5.0	4.2	4.8	5.0	5.3	5.6	4.7	5.4	5.6	5.9	6.2
	20	2.5	2.9	3.0	3.2	3.4	2.7	3.2	3.3	3.5	3.7	3.2	3.6	3.8	4.0	4.2	3.6	4.1	4.4	4.6	4.8	4.1	4.7	4.9	5.2	5.5
	25	2.0	2.3	2.4	2.6	2.7	2.2	2.6	2.7	2.8	3.0	2.6	3.0	3.2	3.3	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.7
	30	1.5	1.7	1.8	1.9	2.0	1.7	2.0	2.1	2.2	2.3	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.5	3.7	3.9
	35	.9	1.1	1.2	1.3	1.4	1.2	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.4	2.5	2.6	2.3	2.7	2.9	3.0	3.2
	40	.4	.6	.6	.7	.7	.6	.8	.9	.9	1.0	1.0	1.2	1.3	1.4	1.4	1.4	1.6	1.7	1.8	1.9	1.7	2.1	2.2	2.3	2.4
	44	.0	.0	.1	.1	.2	.2	.3	.3	.3	.4	.5	.6	.7	.8	.8	.8	1.0	1.1	1.2	1.3	1.2	1.5	1.6	1.7	1.8
6000	-35	5.4	6.2	6.5	6.8	7.2	5.7	6.5	6.8	7.2	7.6	6.2	7.1	7.5	7.9	8.3	6.8	7.8	8.1	8.6	9.0	7.3	8.4	8.9	9.3	9.9
	-30	5.4	6.2	6.5	6.8	7.2	5.7	6.5	6.8	7.2	7.6	6.2	7.1	7.4	7.8	8.3	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-25	5.3	6.1	6.4	6.7	7.1	5.6	6.4	6.7	7.1	7.5	6.1	7.0	7.4	7.7	8.2	6.7	7.7	8.0	8.4	8.9	7.3	8.3	8.7	9.2	9.7
	-20	5.3	6.0	6.3	6.6	7.0	5.6	6.4	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.8	7.2	8.3	8.7	9.1	9.6
	-15	5.0	5.7	6.0	6.3	6.6	5.3	6.0	6.3	6.6	7.0	5.8	6.6	6.9	7.3	7.7	6.3	7.2	7.6	8.0	8.4	6.9	7.9	8.3	8.7	9.2
	-10	4.7	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	6.0	6.8	7.1	7.5	7.9	6.5	7.4	7.8	8.2	8.7
	-5	4.3	4.9	5.2	5.4	5.7	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.7	5.6	6.4	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.1
	0	4.0	4.5	4.8	5.0	5.3	4.2	4.8	5.1	5.3	5.6	4.7	5.4	5.6	5.9	6.2	5.2	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.2	7.6
	5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7	4.8	5.4	5.7	6.0	6.3	5.3	6.0	6.3	6.6	7.0
	10	3.1	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.7	5.0	4.2	4.8	5.1	5.3	5.6	4.7	5.4	5.6	5.9	6.3
	15	2.6	2.9	3.1	3.3	3.4	2.8	3.2	3.4	3.6	3.7	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.9	4.1	4.7	5.0	5.2	5.5
	20	2.0	2.4	2.5	2.6	2.8	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.5	4.8
	25	1.5	1.8	1.9	2.0	2.1	1.8	2.0	2.2	2.3	2.4	2.1	2.5	2.6	2.8	2.9	2.6	3.0	3.1	3.3	3.5	3.0	3.5	3.6	3.8	4.0
	30	1.0	1.2	1.3	1.4	1.5	1.2	1.5	1.6	1.7	1.8	1.6	1.9	2.0	2.1	2.3	2.0	2.3	2.5	2.6	2.8	2.4	2.8	3.0	3.1	3.3
	35	.5	.7	.8	.8	.9	.7	.9	1.0	1.1	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.7	1.8	2.0	2.1	1.9	2.2	2.3	2.5	2.6
	40	.0	.1	.2	.2	.3	.2	.4	.4	.4	.5	.6	.7	.8	.9	.9	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9
	42	-.2	-.1	-.1	-.1	-.1	.0	.1	.1	.1	.2	.3	.4	.5	.5	.6	.7	.8	.9	1.0	1.0	1.0	1.2	1.3	1.4	1.5
7000	-35	5.3	6.0	6.3	6.7	7.0	5.6	6.4	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9	7.2	8.3	8.7	9.1	9.6
	-30	5.1	5.9	6.1	6.5	6.8	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9	6.5	7.4	7.8	8.2	8.6	7.0	8.1	8.5	8.9	9.4
	-25	4.9	5.7	5.9	6.2	6.6	5.2	6.0	6.3																	

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	7.6	8.7	9.2	9.7	10.3	8.2	9.5	10.0	10.6	11.2	8.9	10.3	10.9	11.5	12.2	10.5	12.1	12.8	13.5	14.2	12.3	14.1	14.9	15.6	16.5
	-25	7.6	8.7	9.2	9.7	10.2	8.2	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.1	10.5	12.1	12.7	13.4	14.2	12.3	14.1	14.8	15.6	16.5
	-20	7.6	8.7	9.2	9.7	10.2	8.2	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.1	10.6	12.1	12.7	13.4	14.2	12.3	14.1	14.8	15.6	16.4
	-15	7.6	8.7	9.2	9.7	10.2	8.2	9.5	10.0	10.5	11.1	9.0	10.3	10.8	11.4	12.1	10.6	12.1	12.7	13.4	14.2	12.4	14.1	14.8	15.6	16.4
	-10	7.6	8.7	9.2	9.6	10.2	8.2	9.5	10.0	10.5	11.1	9.0	10.3	10.8	11.4	12.1	10.6	12.1	12.7	13.4	14.1	12.4	14.1	14.8	15.6	16.4
	-5	7.6	8.7	9.1	9.6	10.1	8.2	9.5	9.9	10.5	11.1	9.0	10.3	10.8	11.4	12.0	10.6	12.1	12.7	13.4	14.1	12.4	14.1	14.8	15.5	16.4
	0	7.3	8.4	8.8	9.3	9.8	8.0	9.1	9.6	10.1	10.7	8.7	10.0	10.5	11.0	11.6	10.3	11.8	12.4	13.0	13.7	12.1	13.8	14.4	15.2	16.0
	5	7.0	8.0	8.4	8.9	9.3	7.6	8.8	9.2	9.7	10.2	8.3	9.6	10.0	10.6	11.2	9.9	11.3	11.9	12.5	13.2	11.7	13.3	14.0	14.7	15.5
	10	6.5	7.4	7.8	8.2	8.6	7.1	8.1	8.5	9.0	9.5	7.8	8.9	9.4	9.9	10.4	9.3	10.7	11.2	11.8	12.5	11.1	12.6	13.3	13.9	14.7
	15	5.8	6.7	7.0	7.4	7.8	6.4	7.4	7.7	8.1	8.6	7.1	8.1	8.5	9.0	9.5	8.5	9.8	10.3	10.8	11.4	10.2	11.7	12.3	13.0	13.7
20	5.2	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.3	7.7	6.3	7.3	7.7	8.1	8.5	7.7	8.9	9.4	9.9	10.4	9.4	10.8	11.4	12.0	12.7	
25	4.5	5.2	5.5	5.7	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.5	6.8	7.2	7.6	7.0	8.0	8.5	8.9	9.4	8.5	9.9	10.4	11.0	11.6	
30	3.9	4.5	4.7	4.9	5.2	4.4	5.1	5.3	5.6	5.9	5.0	5.7	6.0	6.3	6.7	6.2	7.2	7.6	8.0	8.4	7.7	8.9	9.4	9.9	10.5	
35	3.3	3.8	4.0	4.2	4.4	3.8	4.3	4.6	4.8	5.1	4.3	5.0	5.2	5.5	5.8	5.5	6.3	6.7	7.1	7.5	6.9	8.0	8.4	8.9	9.4	
40	2.6	3.1	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.3	3.6	4.2	4.4	4.7	4.9	4.8	5.5	5.8	6.1	6.5	6.1	7.1	7.5	7.9	8.4	
45	2.0	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	3.0	3.4	3.6	3.8	4.1	4.1	4.7	5.0	5.2	5.5	5.3	6.2	6.5	6.9	7.3	
46	1.8	2.2	2.3	2.4	2.6	2.3	2.7	2.8	3.0	3.2	2.8	3.2	3.4	3.6	3.8	3.8	4.4	4.7	5.0	5.2	5.1	5.9	6.2	6.6	7.0	
5000	-35	7.8	9.0	9.4	9.9	10.5	8.4	9.7	10.2	10.8	11.4	9.2	10.6	11.1	11.7	12.4	10.8	12.4	13.0	13.7	14.5	12.6	14.4	15.1	15.9	16.8
	-30	7.8	8.9	9.4	9.9	10.5	8.4	9.7	10.2	10.8	11.4	9.2	10.5	11.1	11.7	12.4	10.8	12.4	13.0	13.7	14.4	12.6	14.4	15.1	15.8	16.7
	-25	7.7	8.9	9.4	9.9	10.4	8.4	9.7	10.2	10.7	11.3	9.1	10.5	11.0	11.6	12.3	10.8	12.3	12.9	13.6	14.4	12.5	14.3	15.0	15.8	16.6
	-20	7.7	8.9	9.3	9.8	10.4	8.4	9.6	10.1	10.7	11.3	9.1	10.5	11.0	11.6	12.2	10.7	12.3	12.9	13.6	14.3	12.5	14.3	15.0	15.7	16.6
	-15	7.6	8.7	9.2	9.7	10.2	8.3	9.5	10.0	10.5	11.1	9.0	10.3	10.9	11.4	12.1	10.6	12.2	12.8	13.4	14.2	12.4	14.1	14.8	15.6	16.4
	-10	7.4	8.5	8.9	9.4	9.9	8.1	9.3	9.7	10.3	10.8	8.8	10.1	10.6	11.2	11.8	10.4	11.9	12.5	13.1	13.9	12.2	13.9	14.6	15.3	16.1
	-5	7.2	8.2	8.7	9.1	9.6	7.8	9.0	9.4	9.9	10.5	8.5	9.8	10.3	10.8	11.4	10.1	11.6	12.2	12.8	13.5	11.9	13.6	14.2	15.0	15.8
	0	6.8	7.8	8.2	8.6	9.1	7.5	8.6	9.0	9.4	10.0	8.1	9.3	9.8	10.3	10.9	9.7	11.1	11.7	12.3	13.0	11.5	13.1	13.7	14.4	15.2
	5	6.5	7.4	7.8	8.2	8.6	7.1	8.1	8.5	9.0	9.4	7.8	8.9	9.3	9.8	10.4	9.3	10.6	11.2	11.8	12.4	11.0	12.6	13.2	13.9	14.7
	10	5.8	6.7	7.0	7.4	7.8	6.4	7.4	7.7	8.1	8.6	7.1	8.1	8.5	9.0	9.5	8.5	9.8	10.3	10.8	11.5	10.3	11.8	12.3	13.0	13.7
15	5.2	6.0	6.3	6.6	7.0	5.8	6.6	7.0	7.3	7.7	6.4	7.4	7.7	8.1	8.6	7.8	9.0	9.4	9.9	10.5	9.5	10.9	11.4	12.0	12.7	
20	4.6	5.3	5.5	5.8	6.2	5.1	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.3	7.7	7.1	8.1	8.6	9.0	9.5	8.7	10.0	10.5	11.1	11.7	
25	4.0	4.6	4.8	5.1	5.3	4.5	5.2	5.4	5.7	6.1	5.1	5.8	6.1	6.5	6.8	6.4	7.3	7.7	8.1	8.6	7.9	9.1	9.5	10.1	10.7	
30	3.4	3.9	4.1	4.3	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.1	5.3	5.6	6.0	5.6	6.5	6.8	7.2	7.6	7.1	8.2	8.6	9.1	9.6	
35	2.8	3.2	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	3.8	4.4	4.6	4.8	5.1	4.9	5.7	6.0	6.3	6.7	6.3	7.3	7.7	8.1	8.6	
40	2.2	2.5	2.7	2.8	3.0	2.6	3.1	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.3	4.2	4.9	5.2	5.4	5.8	5.5	6.4	6.7	7.1	7.5	
44	1.6	1.9	2.0	2.2	2.3	2.1	2.4	2.6	2.7	2.9	2.5	3.0	3.1	3.3	3.5	3.6	4.2	4.4	4.6	4.9	4.8	5.6	5.9	6.2	6.6	
6000	-35	8.0	9.2	9.6	10.1	10.7	8.7	9.9	10.5	11.0	11.7	9.4	10.8	11.3	12.0	12.6	11.0	12.6	13.2	13.9	14.7	12.8	14.6	15.3	16.1	16.9
	-30	8.0	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.6	9.4	10.8	11.3	11.9	12.6	11.0	12.6	13.2	13.9	14.6	12.8	14.6	15.3	16.0	16.9
	-25	7.9	9.1	9.5	10.0	10.6	8.6	9.8	10.3	10.9	11.5	9.3	10.7	11.2	11.8	12.5	10.9	12.5	13.1	13.8	14.5	12.7	14.5	15.2	15.9	16.8
	-20	7.8	9.0	9.4	9.9	10.5	8.5	9.8	10.2	10.8	11.4	9.3	10.6	11.1	11.7	12.3	10.9	12.4	13.0	13.7	14.4	12.7	14.4	15.1	15.8	16.7
	-15	7.5	8.6	9.0	9.5	10.0	8.2	9.4	9.8	10.3	10.9	8.9	10.2	10.7	11.2	11.9	10.5	12.0	12.6	13.2	13.9	12.3	14.0	14.6	15.4	16.2
	-10	7.1	8.1	8.5	9.0	9.5	7.8	8.9	9.3	9.8	10.3	8.5	9.7	10.2	10.7	11.3	10.0	11.5	12.1	12.7	13.4	11.8	13.5	14.1	14.8	15.6
	-5	6.7	7.7	8.1	8.5	8.9	7.3	8.4	8.8	9.3	9.8	8.0	9.2	9.6	10.2	10.7	9.6	11.0	11.5	12.1	12.8	11.3	12.9	13.6	14.3	15.0
	0	6.3	7.2	7.6	8.0	8.4	6.9	7.9	8.3	8.7	9.2	7.6	8.7	9.1	9.6	10.1	9.1	10.4	10.9	11.5	12.1	10.8	12.4	13.0	13.7	14.4
	5	5.8	6.7	7.0	7.4	7.7	6.4	7.3	7.7	8.1	8.6	7.1	8.1	8.5	8.9	9.4	8.5	9.8	10.3	10.8	11.4	10.2	11.7	12.3	12.9	13.6
	10	5.2	6.0	6.3	6.6	7.0	5.8	6.7	7.0	7.3	7.7	6.4	7.4	7.7	8.1	8.6	7.8	9.0	9.4	9.9	10.5	9.5	10.9	11.4	12.0	12.7
15	4.6	5.3	5.6	5.9	6.2	5.2	6.0	6.3	6.6	6.9	5.8	6.6	7.0	7.3	7.7	7.1	8.2	8.6	9.1	9.6	8.7	10.0	10.5	11.1	11.8	
20	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.5	5.8	6.1	5.2	5.9	6.2	6.5	6.9	6.4	7.4	7.8	8.2	8.7	8.0	9.2	9.6	10.2	10.7	
25	3.5	4.0	4.2	4.4	4.7	4.0	4.6	4.8	5.1	5.3	4.5	5.2	5.5	5.8	6.1	5.8	6.6	7.0	7.3	7.7	7.2	8.3	8.7	9.2	9.7	
30	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.6	3.9	4.5	4.7	5.0	5.2	5.1	5.8	6.1	6.5	6.8	6.5	7.4	7.8	8.3	8.7	
35	2.3	2.7	2.8	3.0	3.2	2.8	3.2	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	4.4	5.1	5.3	5.6	5.9	5.7	6.6	6.9	7.3	7.7	
40	1.7	2.0	2.1	2.3	2.4	2.2	2.5	2.7	2.8	3.0	2.6	3.1	3.2	3.4	3.6	3.7	4.3	4.5	4.8	5.0	5.0	5.7	6.0	6.4	6.7	
42	1.4																									

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		16300					16000					15500					15000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8000	-35	5.1	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.7	7.1	5.9	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5
	-30	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.0	6.4	6.7	5.5	6.3	6.6	7.0	7.3	6.1	6.9	7.3	7.7	8.1
	-25	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.6	6.9	7.2	7.6
	-20	4.2	4.8	5.0	5.3	5.5	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2
	-15	3.9	4.4	4.7	4.9	5.1	4.2	4.7	5.0	5.2	5.5	4.6	5.3	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8
	-10	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7	4.8	5.5	5.7	6.0	6.3
	-5	3.3	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.7	4.0	4.5	4.8	5.0	5.2	4.4	5.1	5.3	5.6	5.9
	0	2.9	3.4	3.5	3.7	3.9	3.2	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.1	5.4
	5	2.5	2.9	3.0	3.2	3.4	2.8	3.2	3.3	3.5	3.7	3.2	3.6	3.8	4.0	4.2	3.6	4.2	4.4	4.6	4.8
	10	2.1	2.4	2.6	2.7	2.8	2.3	2.7	2.8	3.0	3.1	2.7	3.2	3.3	3.5	3.7	3.2	3.6	3.8	4.0	4.2
	15	1.6	1.9	2.0	2.1	2.3	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.7	2.9	3.0	2.7	3.1	3.2	3.4	3.6
	20	1.2	1.4	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.9	1.8	2.0	2.2	2.3	2.4	2.2	2.5	2.6	2.8	2.9
	25	.7	.8	.9	1.0	1.1	.9	1.1	1.1	1.2	1.3	1.2	1.5	1.6	1.7	1.8	1.6	1.9	2.0	2.1	2.3
	30	.2	.3	.4	.4	.4	.4	.5	.6	.6	.7	.7	.9	1.0	1.1	1.1	1.1	1.3	1.4	1.5	1.6
	35	-.3	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.1	.2	.4	.4	.5	.5	.6	.8	.8	.9	1.0
	38	-.6	-.6	-.6	-.6	-.6	-.4	-.4	-.4	-.3	-.3	-.1	.0	.0	.0	.1	.2	.3	.4	.4	.5
9000	-35	4.5	5.1	5.4	5.7	5.9	4.8	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0	5.8	6.6	6.9	7.3	7.6
	-30	4.2	4.8	5.0	5.3	5.6	4.5	5.1	5.4	5.6	5.9	5.0	5.7	5.9	6.2	6.6	5.5	6.2	6.5	6.9	7.2
	-25	3.9	4.5	4.7	4.9	5.2	4.2	4.8	5.0	5.3	5.5	4.7	5.3	5.6	5.9	6.2	5.1	5.9	6.2	6.5	6.8
	-20	3.6	4.2	4.4	4.6	4.8	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.5	5.8	6.1	6.4
	-15	3.4	3.8	4.0	4.2	4.5	3.6	4.1	4.3	4.6	4.8	4.1	4.6	4.9	5.1	5.4	4.5	5.2	5.4	5.7	6.0
	-10	3.1	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.8	4.3	4.5	4.7	5.0	4.2	4.8	5.0	5.3	5.6
	-5	2.8	3.2	3.3	3.5	3.7	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.1
	0	2.4	2.8	2.9	3.1	3.2	2.7	3.1	3.2	3.4	3.5	3.1	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.7
	5	2.1	2.4	2.5	2.6	2.8	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.2	3.4	3.6	3.1	3.6	3.8	3.9	4.2
	10	1.7	1.9	2.0	2.1	2.3	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.2	3.4	3.6
	15	1.2	1.4	1.5	1.6	1.7	1.4	1.7	1.7	1.8	2.0	1.8	2.1	2.2	2.3	2.4	2.2	2.5	2.7	2.8	3.0
	20	.7	.9	1.0	1.0	1.1	.9	1.1	1.2	1.3	1.4	1.3	1.5	1.6	1.7	1.8	1.7	2.0	2.1	2.2	2.3
	25	.3	.4	.4	.5	.5	.5	.6	.7	.7	.8	.8	1.0	1.1	1.1	1.2	1.2	1.4	1.5	1.6	1.7
	30	-.2	-.1	-.1	-.1	-.1	.0	.1	.1	.1	.2	.3	.4	.5	.5	.6	.7	.8	.9	1.0	1.0
	35	-.7	-.6	-.6	-.6	-.6	-.5	-.4	-.4	-.4	-.4	-.2	-.1	-.1	.0	.0	.2	.3	.3	.4	.4
	36	-.8	-.8	-.8	-.8	-.8	-.6	-.6	-.6	-.6	-.6	-.3	-.3	-.2	-.2	-.2	.0	.1	.2	.2	.2
10000	-35	3.9	4.5	4.7	4.9	5.2	4.2	4.8	5.0	5.3	5.6	4.7	5.3	5.6	5.9	6.2	5.2	5.9	6.2	6.5	6.8
	-30	3.7	4.2	4.4	4.6	4.8	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.9	5.5	5.8	6.1	6.4
	-25	3.4	3.9	4.1	4.3	4.5	3.6	4.2	4.4	4.6	4.8	4.1	4.7	4.9	5.1	5.4	4.6	5.2	5.5	5.7	6.0
	-20	3.1	3.6	3.8	3.9	4.1	3.4	3.9	4.0	4.2	4.5	3.8	4.4	4.6	4.8	5.0	4.3	4.9	5.1	5.4	5.7
	-15	2.9	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.7	4.0	4.5	4.8	5.0	5.3
	-10	2.6	2.9	3.1	3.2	3.4	2.8	3.2	3.4	3.5	3.7	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.9
	-5	2.3	2.6	2.7	2.9	3.0	2.5	2.9	3.0	3.2	3.3	2.9	3.3	3.5	3.7	3.9	3.4	3.8	4.0	4.2	4.4
	0	1.9	2.3	2.4	2.5	2.6	2.2	2.5	2.6	2.8	2.9	2.6	3.0	3.1	3.3	3.4	3.0	3.4	3.6	3.8	4.0
	5	1.6	1.9	2.0	2.1	2.2	1.8	2.1	2.2	2.4	2.5	2.2	2.6	2.7	2.8	3.0	2.7	3.0	3.2	3.4	3.5
	10	1.2	1.4	1.5	1.6	1.7	1.4	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.3	2.5	2.2	2.5	2.7	2.8	3.0
	15	.8	.9	1.0	1.1	1.1	1.0	1.2	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9	1.7	2.0	2.1	2.2	2.4
	20	.3	.4	.5	.5	.6	.5	.6	.7	.8	.8	.9	1.0	1.1	1.2	1.3	1.2	1.5	1.5	1.6	1.7
	25	-.1	-.1	-.1	.0	.0	.0	.1	.2	.2	.2	.4	.5	.5	.6	.7	.7	.9	1.0	1.0	1.1
	30	-.6	-.6	-.6	-.6	-.5	-.4	-.4	-.4	-.3	-.3	-.1	.0	.0	.0	.1	.2	.4	.4	.4	.5
	34	-1.0	-1.0	-1.0	-1.0	-1.0	-.8	-.8	-.8	-.8	-.8	-.5	-.5	-.5	-.4	-.4	-.2	-.1	-.1	-.1	.0
11000	-35	3.4	3.9	4.1	4.3	4.5	3.7	4.2	4.4	4.6	4.8	4.1	4.7	4.9	5.2	5.4	4.6	5.2	5.5	5.7	6.0
	-30	3.1	3.6	3.8	4.0	4.2	3.4	3.9	4.1	4.3	4.5	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7
	-25	2.9	3.3	3.5	3.6	3.8	3.1	3.6	3.8	3.9	4.1	3.6	4.1	4.3	4.5	4.7	4.0	4.6	4.8	5.0	5.3
	-20	2.6	3.0	3.2	3.3	3.5	2.9	3.3	3.4	3.6	3.8	3.3	3.8	3.9	4.1	4.3	3.7	4.3	4.5	4.7	4.9
	-15	2.4	2.7	2.8	3.0	3.1	2.6	3.0	3.1	3.3	3.4	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.5
	-10	2.1	2.4	2.5	2.6	2.8	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.3	3.4	3.6	3.1	3.6	3.8	4.0	4.2
	-5	1.8	2.1	2.2	2.3	2.4	2.0	2.3	2.4	2.6	2.7	2.4	2.8	2.9	3.1	3.2	2.8	3.2	3.4	3.6	3.8
	0	1.5	1.7	1.8	1.9	2.0	1.7	2.0	2.1	2.2	2.3	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.3
	5	1.2	1.4	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.9	1.8	2.0	2.2	2.3	2.4	2.2	2.5	2.6	2.8	2.9
	10	.8	.9	1.0	1.1	1.1	1.0	1.2	1.2	1.3	1.4	1.3	1.6	1.6	1.7	1.8	1.7	2.0	2.1	2.2	2.3
	15	.3	.5	.5	.6	.6	.5	.7	.7	.8	.9	.9	1.1	1.1	1.2	1.3	1.3	1.5	1.6	1.7	1.8
	20	-.1	.0	.0	.0	.1	.1	.2	.2	.3	.3	.4	.6	.6	.7	.7	.8	1.0	1.0	1.1	1.2
	25	-.5	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.2	.0	.1	.1	.1	.2	.3	.4	.5	.5	.6
	30	-1.0	-1.0	-1.0	-1.0	-1.0	-.8	-.8	-.8	-.8	-.8	-.5	-.4	-.4	-.4	-.4	-.1	-.1	.0	.0	.0
	32	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.7	-.7	-.7	-.7	-.7	-.4	-.3	-.3	-.3	-.3

* FOR ANTI-ICE SYSTEMS ON. SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.



Figure 4-29 (Sheet 5 of 8)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS														
		14000					13500					13000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8000	-35	7.6	8.7	9.1	9.6	10.1	8.3	9.5	9.9	10.5	11.0	9.0	10.3	10.8	11.4	12.0
	-30	7.3	8.3	8.7	9.2	9.6	7.9	9.0	9.5	10.0	10.5	8.6	9.9	10.3	10.9	11.5
	-25	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.1	9.5	10.0	8.2	9.4	9.9	10.4	11.0
	-20	6.6	7.5	7.9	8.3	8.7	7.2	8.2	8.6	9.1	9.5	7.9	9.0	9.4	9.9	10.5
	-15	6.2	7.1	7.4	7.8	8.2	6.8	7.8	8.2	8.6	9.1	7.5	8.6	9.0	9.4	9.9
	-10	5.8	6.7	7.0	7.4	7.8	6.4	7.4	7.7	8.1	8.6	7.1	8.1	8.5	8.9	9.4
	-5	5.5	6.3	6.6	6.9	7.3	6.1	6.9	7.3	7.6	8.0	6.7	7.7	8.0	8.4	8.9
	0	5.1	5.8	6.1	6.4	6.7	5.7	6.5	6.8	7.1	7.5	6.3	7.2	7.5	7.9	8.3
	5	4.6	5.3	5.5	5.8	6.1	5.2	5.9	6.2	6.5	6.8	5.7	6.6	6.9	7.3	7.6
	10	4.1	4.7	5.0	5.2	5.5	4.7	5.3	5.6	5.9	6.2	5.2	6.0	6.3	6.6	7.0
	15	3.6	4.1	4.3	4.5	4.8	4.1	4.7	4.9	5.2	5.5	4.6	5.3	5.6	5.9	6.2
	20	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.3	4.5	4.7	4.1	4.7	4.9	5.1	5.4
	25	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.5	4.0	4.2	4.4	4.6
	30	1.9	2.2	2.4	2.5	2.6	2.4	2.7	2.9	3.1	3.2	2.9	3.3	3.5	3.7	3.9
	35	1.4	1.6	1.7	1.8	1.9	1.8	2.1	2.2	2.4	2.5	2.3	2.6	2.8	2.9	3.1
	38	1.0	1.2	1.3	1.4	1.4	1.4	1.7	1.8	1.9	2.0	1.8	2.2	2.3	2.4	2.6
9000	-35	6.9	7.9	8.3	8.7	9.2	7.6	8.7	9.1	9.6	10.1	8.3	9.5	9.9	10.4	11.0
	-30	6.6	7.5	7.9	8.3	8.7	7.2	8.3	8.7	9.1	9.6	7.9	9.0	9.5	10.0	10.5
	-25	6.3	7.1	7.5	7.9	8.3	6.9	7.9	8.2	8.7	9.1	7.5	8.6	9.0	9.5	10.0
	-20	5.9	6.8	7.1	7.5	7.9	6.5	7.5	7.8	8.2	8.7	7.2	8.2	8.6	9.0	9.5
	-15	5.6	6.4	6.7	7.0	7.4	6.2	7.1	7.4	7.8	8.2	6.8	7.8	8.2	8.6	9.1
	-10	5.2	6.0	6.3	6.6	6.9	5.8	6.6	7.0	7.3	7.7	6.4	7.4	7.7	8.1	8.5
	-5	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.9	7.2	6.1	6.9	7.3	7.6	8.0
	0	4.5	5.1	5.4	5.7	6.0	5.0	5.8	6.0	6.3	6.7	5.6	6.4	6.7	7.1	7.5
	5	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.5	5.8	6.1	5.2	5.9	6.2	6.5	6.9
	10	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.2	5.5	4.7	5.3	5.6	5.9	6.2
	15	3.1	3.5	3.7	3.9	4.1	3.6	4.1	4.3	4.5	4.8	4.1	4.7	4.9	5.2	5.5
	20	2.5	2.9	3.1	3.2	3.4	3.0	3.5	3.6	3.8	4.0	3.5	4.0	4.2	4.5	4.7
	25	2.0	2.3	2.4	2.6	2.7	2.4	2.8	3.0	3.1	3.3	2.9	3.4	3.6	3.7	4.0
	30	1.4	1.7	1.8	1.9	2.0	1.9	2.2	2.3	2.4	2.6	2.3	2.7	2.9	3.0	3.2
	35	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9	1.8	2.1	2.2	2.3	2.5
	36	.8	.9	1.0	1.1	1.2	1.2	1.4	1.5	1.6	1.7	1.6	1.9	2.0	2.1	2.3
10000	-35	6.3	7.2	7.5	7.9	8.3	6.9	7.9	8.2	8.7	9.1	7.5	8.6	9.1	9.5	10.0
	-30	5.9	6.8	7.1	7.5	7.9	6.5	7.5	7.8	8.2	8.7	7.2	8.2	8.6	9.1	9.6
	-25	5.6	6.4	6.7	7.1	7.4	6.2	7.1	7.4	7.8	8.2	6.9	7.8	8.2	8.6	9.1
	-20	5.3	6.1	6.4	6.7	7.0	5.9	6.7	7.1	7.4	7.8	6.5	7.4	7.8	8.2	8.6
	-15	5.0	5.7	6.0	6.3	6.6	5.6	6.3	6.6	7.0	7.4	6.2	7.0	7.4	7.8	8.2
	-10	4.7	5.3	5.6	5.9	6.2	5.2	5.9	6.2	6.5	6.9	5.8	6.6	6.9	7.3	7.7
	-5	4.3	4.9	5.2	5.4	5.7	4.8	5.5	5.8	6.1	6.4	5.4	6.2	6.5	6.8	7.2
	0	3.9	4.5	4.7	5.0	5.2	4.5	5.1	5.3	5.6	5.9	5.0	5.7	6.0	6.3	6.7
	5	3.6	4.1	4.3	4.5	4.7	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.5	5.8	6.1
	10	3.1	3.5	3.7	3.9	4.1	3.6	4.1	4.3	4.5	4.8	4.1	4.7	4.9	5.2	5.5
	15	2.6	3.0	3.1	3.3	3.5	3.0	3.5	3.7	3.9	4.1	3.6	4.1	4.3	4.5	4.7
	20	2.0	2.4	2.5	2.6	2.8	2.5	2.9	3.0	3.2	3.4	3.0	3.4	3.6	3.8	4.0
	25	1.5	1.8	1.9	2.0	2.1	2.0	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.1	3.3
	30	1.0	1.2	1.3	1.4	1.5	1.4	1.7	1.8	1.9	2.0	1.9	2.2	2.3	2.4	2.6
	34	.5	.7	.7	.8	.9	.9	1.1	1.2	1.3	1.4	1.4	1.6	1.7	1.8	1.9
	35	.4	.5	.5	.6	.6	.7	.9	1.0	1.1	1.2	1.1	1.4	1.5	1.5	1.6
11000	-35	5.6	6.4	6.7	7.1	7.5	6.2	7.1	7.5	7.8	8.3	6.9	7.8	8.2	8.7	9.1
	-30	5.3	6.1	6.4	6.7	7.1	5.9	6.7	7.1	7.4	7.8	6.5	7.5	7.8	8.2	8.7
	-25	5.0	5.7	6.0	6.3	6.6	5.6	6.4	6.7	7.0	7.4	6.2	7.1	7.4	7.8	8.2
	-20	4.7	5.4	5.6	5.9	6.2	5.3	6.0	6.3	6.6	7.0	5.9	6.7	7.0	7.4	7.8
	-15	4.4	5.0	5.3	5.5	5.8	4.9	5.6	5.9	6.2	6.5	5.5	6.3	6.6	7.0	7.3
	-10	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.5	5.8	6.1	5.2	5.9	6.2	6.5	6.9
	-5	3.8	4.3	4.5	4.7	5.0	4.3	4.9	5.1	5.4	5.7	4.8	5.5	5.8	6.1	6.4
	0	3.4	3.9	4.1	4.3	4.5	3.9	4.5	4.7	4.9	5.2	4.5	5.1	5.3	5.6	5.9
	5	3.1	3.5	3.7	3.9	4.1	3.5	4.1	4.2	4.5	4.7	4.1	4.6	4.9	5.1	5.4
	10	2.6	3.0	3.1	3.3	3.4	3.0	3.5	3.7	3.8	4.1	3.5	4.1	4.3	4.5	4.7
	15	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.1	3.2	3.4	3.0	3.5	3.7	3.8	4.1
	20	1.6	1.8	1.9	2.1	2.2	2.0	2.3	2.5	2.6	2.7	2.5	2.9	3.0	3.2	3.4
	25	1.1	1.3	1.4	1.4	1.5	1.5	1.7	1.8	2.0	2.1	1.9	2.3	2.4	2.5	2.7
	30	.6	.7	.8	.9	.9	1.0	1.2	1.3	1.3	1.4	1.4	1.7	1.8	1.9	2.0
	32	.3	.5	.5	.6	.6	.7	.9	1.0	1.0	1.1	1.1	1.4	1.5	1.5	1.6
	33	.2	.4	.4	.5	.5	.6	.8	.9	.9	1.0	1.0	1.3	1.4	1.4	1.5

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.



Figure 4-29 (Sheet 6 of 8)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT
FLAPS - 7⁰CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		16300					16000					15500					15000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	2.9	3.3	3.5	3.6	3.8	3.1	3.6	3.7	3.9	4.1	3.6	4.1	4.3	4.5	4.7	4.0	4.6	4.8	5.0	5.3
2	-30	2.6	3.0	3.2	3.3	3.5	2.9	3.3	3.4	3.6	3.8	3.3	3.8	3.9	4.1	4.4	3.7	4.3	4.5	4.7	4.9
0	-25	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.1	3.3	3.5	3.0	3.5	3.6	3.8	4.0	3.5	4.0	4.1	4.4	4.6
0	-20	2.1	2.4	2.6	2.7	2.8	2.4	2.7	2.8	3.0	3.1	2.8	3.2	3.3	3.5	3.7	3.2	3.6	3.8	4.0	4.2
0	-15	1.9	2.2	2.3	2.4	2.5	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.1	3.3	2.9	3.3	3.5	3.7	3.9
0	-10	1.6	1.9	2.0	2.1	2.2	1.8	2.1	2.2	2.3	2.5	2.2	2.5	2.7	2.8	3.0	2.6	3.0	3.2	3.3	3.5
	-5	1.3	1.6	1.6	1.7	1.8	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.3	2.5	2.6	2.3	2.7	2.8	3.0	3.1
	0	1.1	1.3	1.3	1.4	1.5	1.3	1.5	1.6	1.7	1.8	1.6	1.9	2.0	2.1	2.2	2.0	2.4	2.5	2.6	2.7
	5	.7	.9	.9	1.0	1.1	.9	1.1	1.2	1.3	1.3	1.3	1.5	1.6	1.7	1.8	1.7	1.9	2.0	2.2	2.3
	10	.3	.4	.5	.5	.6	.5	.7	.7	.8	.8	.9	1.1	1.1	1.2	1.3	1.3	1.5	1.6	1.7	1.8
	15	-.1	.0	.0	.1	.1	.1	.2	.3	.3	.3	.5	.6	.6	.7	.8	.8	1.0	1.1	1.1	1.2
	20	-.5	-.5	-.4	-.4	-.4	-.3	-.3	-.2	-.2	-.2	.0	.1	.1	.2	.2	.4	.5	.5	.6	.6
	25	-.9	-.9	-.9	-.9	-.9	-.7	-.7	-.7	-.7	-.7	-.4	-.4	-.4	-.3	-.3	-.1	.0	.0	.1	.1
	30	-1.3	-1.3	-1.4	-1.4	-1.4	-1.1	-1.2	-1.2	-1.2	-1.2	-.8	-.8	-.8	-.8	-.8	-.5	-.5	-.5	-.5	-.4
1	-35	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.1	3.3	3.5	3.0	3.5	3.6	3.8	4.0	3.5	4.0	4.1	4.4	4.6
4	-30	2.1	2.5	2.6	2.7	2.9	2.4	2.7	2.9	3.0	3.2	2.8	3.2	3.3	3.5	3.7	3.2	3.7	3.8	4.0	4.2
0	-25	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.5	3.7	3.9
0	-20	1.6	1.9	2.0	2.1	2.2	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.7	2.9	3.0	2.7	3.1	3.2	3.4	3.6
0	-15	1.4	1.6	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.0	3.2
0	-10	1.1	1.4	1.4	1.5	1.6	1.4	1.6	1.7	1.8	1.9	1.7	2.0	2.1	2.2	2.4	2.1	2.5	2.6	2.7	2.9
	-5	.9	1.1	1.1	1.2	1.3	1.1	1.3	1.4	1.5	1.5	1.5	1.7	1.8	1.9	2.0	1.8	2.1	2.3	2.4	2.5
	0	.6	.8	.8	.9	1.0	.8	1.0	1.1	1.1	1.2	1.2	1.4	1.5	1.6	1.7	1.6	1.8	1.9	2.0	2.1
	5	.3	.4	.4	.5	.5	.5	.6	.7	.7	.8	.8	1.0	1.1	1.1	1.2	1.2	1.4	1.5	1.6	1.7
	10	-.1	.0	.0	.0	.1	.1	.2	.2	.3	.3	.4	.6	.6	.7	.7	.8	1.0	1.0	1.1	1.2
	15	-.5	-.4	-.4	-.4	-.4	-.3	-.2	-.2	-.2	-.2	.0	.1	.2	.2	.2	.4	.5	.6	.6	.7
	20	-.9	-.9	-.9	-.9	-.9	-.7	-.7	-.7	-.7	-.7	-.4	-.3	-.3	-.3	-.3	.0	.0	.1	.1	.1
	25	-1.3	-1.3	-1.3	-1.3	-1.4	-1.1	-1.1	-1.1	-1.1	-1.2	-.8	-.8	-.8	-.8	-.8	-.5	-.4	-.4	-.4	-.4
	30	-1.5	-1.6	-1.7	-1.7	-1.7	-1.4	-1.4	-1.5	-1.5	-1.5	-1.1	-1.1	-1.1	-1.2	-1.2	-.8	-.8	-.8	-.8	-.8
1	-35	1.9	2.2	2.3	2.4	2.5	2.1	2.4	2.6	2.7	2.8	2.5	2.9	3.0	3.2	3.3	2.9	3.4	3.5	3.7	3.9
4	-30	1.7	1.9	2.0	2.1	2.2	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.7	2.9	3.0	2.7	3.1	3.2	3.4	3.6
0	-25	1.4	1.7	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.4	2.8	2.9	3.1	3.2
0	-20	1.2	1.4	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.9	1.8	2.0	2.2	2.3	2.4	2.2	2.5	2.6	2.8	2.9
0	-15	.9	1.1	1.2	1.3	1.4	1.2	1.4	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.3	2.4	2.6
0	-10	.7	.9	.9	1.0	1.1	.9	1.1	1.2	1.2	1.3	1.3	1.5	1.6	1.7	1.8	1.6	1.9	2.0	2.1	2.2
	-5	.5	.6	.6	.7	.7	.7	.8	.9	.9	1.0	1.0	1.2	1.3	1.3	1.4	1.4	1.6	1.7	1.8	1.9
	0	.2	.3	.3	.4	.4	.4	.5	.5	.6	.6	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.4	1.5
	5	-.1	-.1	-.1	.0	.0	.0	.1	.2	.2	.2	.4	.5	.5	.6	.7	.7	.9	1.0	1.0	1.1
	10	-.5	-.4	-.4	-.4	-.4	-.3	-.2	-.2	-.2	-.2	.0	.1	.2	.2	.2	.4	.5	.6	.6	.7
	15	-.9	-.9	-.9	-.9	-.9	-.7	-.7	-.7	-.7	-.6	-.4	-.3	-.3	-.3	-.3	.0	.0	.1	.1	.1
	20	-1.2	-1.3	-1.3	-1.3	-1.3	-1.1	-1.1	-1.1	-1.1	-1.1	-.8	-.8	-.8	-.8	-.8	-.4	-.4	-.4	-.4	-.4
	25	-1.6	-1.7	-1.7	-1.8	-1.8	-1.5	-1.5	-1.5	-1.6	-1.6	-1.2	-1.2	-1.2	-1.2	-1.2	-.9	-.9	-.9	-.9	-.9
	30	-1.7	-1.8	-1.9	-1.9	-2.0	-1.6	-1.7	-1.7	-1.7	-1.8	-1.3	-1.4	-1.4	-1.4	-1.4	-1.0	-1.0	-1.0	-1.0	-1.1

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-29 (Sheet 7 of 8)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		14000					13500					13000					12000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	5.0	5.7	6.0	6.3	6.6	5.6	6.4	6.7	7.0	7.4	6.2	7.1	7.4	7.8	8.2	7.6	8.7	9.1	9.6	10.1
2	-30	4.7	5.4	5.7	5.9	6.3	5.3	6.0	6.3	6.6	7.0	5.9	6.7	7.0	7.4	7.8	7.2	8.3	8.7	9.1	9.6
0	-25	4.4	5.1	5.3	5.6	5.9	5.0	5.7	6.0	6.3	6.6	5.6	6.3	6.7	7.0	7.4	6.9	7.9	8.3	8.7	9.1
0	-20	4.1	4.7	5.0	5.2	5.5	4.7	5.3	5.6	5.9	6.2	5.2	6.0	6.3	6.6	6.9	6.5	7.5	7.8	8.2	8.7
0	-15	3.8	4.4	4.6	4.8	5.1	4.4	5.0	5.2	5.5	5.8	4.9	5.6	5.9	6.2	6.5	6.2	7.1	7.4	7.8	8.2
0	-10	3.5	4.0	4.2	4.4	4.7	4.0	4.6	4.8	5.1	5.3	4.6	5.2	5.5	5.8	6.1	5.8	6.6	7.0	7.3	7.7
	-5	3.2	3.7	3.9	4.1	4.3	3.7	4.3	4.5	4.7	4.9	4.3	4.9	5.1	5.3	5.6	5.5	6.2	6.5	6.9	7.2
	0	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.5	3.9	4.5	4.7	4.9	5.2	5.1	5.8	6.1	6.4	6.7
	5	2.5	2.9	3.0	3.2	3.4	3.0	3.4	3.6	3.8	4.0	3.5	4.0	4.2	4.4	4.6	4.6	5.3	5.6	5.8	6.1
	10	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.1	3.2	3.4	3.0	3.5	3.6	3.8	4.0	4.1	4.7	4.9	5.2	5.5
	15	1.6	1.9	2.0	2.1	2.2	2.1	2.4	2.5	2.6	2.8	2.5	2.9	3.1	3.2	3.4	3.6	4.1	4.3	4.5	4.8
	20	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	2.0	2.3	2.4	2.6	2.7	3.0	3.5	3.7	3.8	4.1
	25	.6	.8	.9	.9	1.0	1.0	1.3	1.3	1.4	1.5	1.5	1.7	1.8	2.0	2.1	2.5	2.8	3.0	3.2	3.3
	30	.2	.3	.3	.4	.4	.6	.7	.8	.8	.9	1.0	1.2	1.3	1.4	1.4	1.9	2.2	2.4	2.5	2.6
1	-35	4.4	5.1	5.3	5.6	5.9	5.0	5.7	6.0	6.3	6.6	5.6	6.3	6.7	7.0	7.4	6.9	7.9	8.3	8.7	9.1
3	-30	4.2	4.7	5.0	5.2	5.5	4.7	5.3	5.6	5.9	6.2	5.3	6.0	6.3	6.6	7.0	6.6	7.5	7.9	8.3	8.7
0	-25	3.9	4.4	4.6	4.9	5.1	4.4	5.0	5.3	5.5	5.8	4.9	5.6	5.9	6.2	6.5	6.2	7.1	7.4	7.8	8.2
0	-20	3.6	4.1	4.3	4.5	4.7	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.6	5.8	6.1	5.9	6.7	7.0	7.4	7.8
0	-15	3.3	3.8	4.0	4.2	4.4	3.8	4.3	4.5	4.8	5.0	4.3	4.9	5.2	5.4	5.7	5.5	6.3	6.6	7.0	7.3
0	-10	3.0	3.4	3.6	3.8	4.0	3.5	4.0	4.2	4.4	4.6	4.0	4.6	4.8	5.1	5.3	5.2	5.9	6.2	6.5	6.9
	-5	2.7	3.1	3.3	3.4	3.6	3.2	3.6	3.8	4.0	4.2	3.7	4.2	4.4	4.7	4.9	4.9	5.5	5.8	6.1	6.4
	0	2.4	2.8	2.9	3.1	3.2	2.9	3.3	3.5	3.6	3.8	3.4	3.9	4.1	4.3	4.5	4.5	5.1	5.4	5.7	6.0
	5	2.0	2.3	2.4	2.6	2.7	2.5	2.8	3.0	3.1	3.3	2.9	3.4	3.5	3.7	3.9	4.0	4.6	4.8	5.1	5.4
	10	1.6	1.9	2.0	2.1	2.2	2.0	2.4	2.5	2.6	2.8	2.5	2.9	3.0	3.2	3.4	3.6	4.1	4.3	4.5	4.7
	15	1.1	1.4	1.4	1.5	1.6	1.6	1.8	1.9	2.0	2.2	2.0	2.3	2.5	2.6	2.7	3.0	3.5	3.7	3.9	4.1
	20	.7	.8	.9	1.0	1.0	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	2.5	2.9	3.0	3.2	3.4
	25	.2	.3	.4	.4	.5	.6	.8	.8	.9	1.0	1.0	1.2	1.3	1.4	1.5	2.0	2.3	2.4	2.6	2.7
	28	-.1	.0	.0	.0	.1	.3	.4	.4	.5	.5	.7	.8	.9	1.0	1.0	1.6	1.9	2.0	2.1	2.2
1	-35	3.9	4.4	4.6	4.9	5.1	4.4	5.0	5.2	5.5	5.8	4.9	5.6	5.9	6.2	6.5	6.2	7.1	7.4	7.8	8.2
3	-30	3.6	4.1	4.3	4.5	4.7	4.1	4.7	4.9	5.1	5.4	4.6	5.3	5.6	5.8	6.1	5.9	6.7	7.0	7.4	7.8
0	-25	3.3	3.8	4.0	4.2	4.4	3.8	4.4	4.6	4.8	5.0	4.4	5.0	5.2	5.5	5.8	5.6	6.3	6.7	7.0	7.4
0	-20	3.0	3.5	3.7	3.8	4.0	3.5	4.0	4.2	4.4	4.7	4.1	4.6	4.9	5.1	5.4	5.2	6.0	6.3	6.6	6.9
0	-15	2.8	3.2	3.3	3.5	3.7	3.3	3.7	3.9	4.1	4.3	3.8	4.3	4.5	4.7	5.0	4.9	5.6	5.9	6.2	6.5
0	-10	2.5	2.9	3.0	3.2	3.3	3.0	3.4	3.6	3.7	3.9	3.5	4.0	4.2	4.4	4.6	4.6	5.3	5.5	5.8	6.1
	-5	2.2	2.5	2.7	2.8	3.0	2.7	3.1	3.2	3.4	3.5	3.2	3.6	3.8	4.0	4.2	4.3	4.9	5.1	5.4	5.6
	0	1.9	2.2	2.3	2.4	2.6	2.3	2.7	2.8	3.0	3.1	2.8	3.2	3.4	3.6	3.8	3.9	4.5	4.7	4.9	5.2
	5	1.5	1.8	1.9	2.0	2.1	2.0	2.3	2.4	2.5	2.6	2.4	2.8	2.9	3.1	3.2	3.5	4.0	4.2	4.4	4.6
	10	1.1	1.4	1.4	1.5	1.6	1.6	1.8	1.9	2.0	2.2	2.0	2.3	2.5	2.6	2.7	3.0	3.5	3.7	3.9	4.1
	15	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	2.5	2.9	3.1	3.2	3.4
	20	.3	.4	.4	.5	.5	.7	.8	.9	.9	1.0	1.1	1.3	1.4	1.4	1.5	2.0	2.3	2.5	2.6	2.7
	25	-.2	-.1	-.1	-.1	.0	.2	.3	.3	.4	.4	.6	.7	.8	.9	.9	1.5	1.7	1.8	2.0	2.1
	26	-.3	-.3	-.3	-.3	-.2	.0	.1	.1	.2	.2	.4	.6	.6	.7	.7	1.3	1.5	1.6	1.7	1.8

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.



Figure 4-29 (Sheet 8 of 8)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT
FLAPS - 15°CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
0	-25	3.8	4.5	4.8	5.1	5.4	4.1	4.8	5.1	5.4	5.8	4.6	5.4	5.7	6.1	6.5	5.1	6.0	6.4	6.8	7.2	5.7	6.7	7.1	7.5	8.0
	-20	3.8	4.5	4.8	5.1	5.4	4.1	4.8	5.1	5.4	5.8	4.6	5.4	5.7	6.1	6.5	5.1	6.0	6.4	6.7	7.2	5.7	6.7	7.0	7.5	8.0
	-15	3.9	4.5	4.8	5.1	5.4	4.1	4.8	5.1	5.4	5.8	4.6	5.4	5.7	6.1	6.5	5.1	6.0	6.4	6.7	7.2	5.7	6.7	7.0	7.5	8.0
	-10	3.9	4.5	4.8	5.1	5.4	4.1	4.8	5.1	5.4	5.8	4.6	5.4	5.7	6.1	6.5	5.1	6.0	6.4	6.8	7.2	5.7	6.7	7.1	7.5	8.0
	-5	3.9	4.5	4.8	5.1	5.4	4.1	4.8	5.1	5.4	5.8	4.6	5.4	5.7	6.1	6.4	5.2	6.0	6.4	6.7	7.2	5.7	6.7	7.0	7.5	7.9
	0	3.9	4.5	4.8	5.0	5.4	4.1	4.8	5.1	5.4	5.7	4.6	5.4	5.7	6.0	6.4	5.1	6.0	6.3	6.7	7.1	5.7	6.6	7.0	7.4	7.9
	5	3.9	4.5	4.7	5.0	5.3	4.1	4.8	5.1	5.4	5.7	4.6	5.4	5.7	6.0	6.4	5.1	6.0	6.3	6.7	7.1	5.7	6.6	7.0	7.4	7.9
	10	3.8	4.5	4.7	5.0	5.3	4.1	4.8	5.1	5.4	5.7	4.6	5.4	5.7	6.0	6.4	5.1	6.0	6.3	6.7	7.1	5.7	6.6	7.0	7.4	7.8
	15	3.8	4.5	4.7	5.0	5.3	4.1	4.8	5.1	5.3	5.7	4.6	5.3	5.6	6.0	6.3	5.1	6.0	6.3	6.6	7.0	5.7	6.6	7.0	7.4	7.8
	20	3.7	4.3	4.6	4.8	5.1	4.0	4.6	4.9	5.2	5.5	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.5	6.8	5.5	6.4	6.8	7.2	7.6
10	25	3.6	4.2	4.4	4.6	4.9	3.9	4.5	4.7	5.0	5.3	4.3	5.0	5.3	5.6	5.9	4.8	5.6	5.9	6.3	6.6	5.4	6.2	6.6	7.0	7.4
	30	3.1	3.6	3.8	4.0	4.3	3.3	3.9	4.1	4.4	4.6	3.8	4.4	4.7	4.9	5.2	4.3	5.0	5.3	5.6	5.9	4.8	5.6	5.9	6.3	6.6
	35	2.5	2.9	3.1	3.3	3.5	2.7	3.2	3.4	3.6	3.8	3.2	3.7	3.9	4.2	4.4	3.6	4.2	4.5	4.8	5.0	4.1	4.8	5.1	5.4	5.7
	40	1.9	2.2	2.4	2.5	2.7	2.1	2.5	2.6	2.8	3.0	2.5	3.0	3.2	3.3	3.6	3.0	3.5	3.7	3.9	4.2	3.5	4.0	4.3	4.5	4.8
	45	1.3	1.5	1.6	1.7	1.9	1.5	1.8	1.9	2.0	2.2	1.9	2.2	2.4	2.5	2.7	2.3	2.7	2.9	3.1	3.3	2.8	3.2	3.4	3.6	3.9
	50	.6	.8	.9	1.0	1.1	.9	1.1	1.1	1.2	1.3	1.2	1.5	1.6	1.7	1.8	1.6	2.0	2.1	2.2	2.4	2.1	2.4	2.6	2.8	2.9
	54	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.2
	58	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.2
	62	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.2
	66	.1	.2	.3	.3	.4	.3	.5	.5	.6	.6	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.2
20	-25	4.0	4.7	4.9	5.2	5.6	4.3	5.0	5.3	5.6	5.9	4.7	5.5	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.4	5.8	6.8	7.2	7.7	8.1
	-20	4.0	4.6	4.9	5.2	5.5	4.3	5.0	5.3	5.6	5.9	4.7	5.5	5.9	6.2	6.6	5.3	6.1	6.5	6.9	7.3	5.8	6.8	7.2	7.6	8.1
	-15	4.0	4.7	4.9	5.2	5.5	4.3	5.0	5.3	5.6	5.9	4.8	5.5	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3	5.8	6.8	7.2	7.6	8.1
	-10	4.0	4.7	4.9	5.2	5.5	4.3	5.0	5.3	5.6	5.9	4.8	5.5	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3	5.9	6.8	7.2	7.6	8.1
	-5	4.0	4.7	4.9	5.2	5.5	4.3	5.0	5.3	5.6	5.9	4.8	5.5	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3	5.9	6.8	7.2	7.6	8.1
	0	4.0	4.7	4.9	5.2	5.5	4.3	5.0	5.2	5.6	5.9	4.8	5.5	5.8	6.2	6.6	5.3	6.2	6.5	6.9	7.3	5.9	6.8	7.2	7.6	8.1
	5	4.0	4.6	4.9	5.2	5.5	4.3	5.0	5.2	5.5	5.9	4.8	5.5	5.8	6.2	6.5	5.3	6.1	6.5	6.9	7.3	5.9	6.8	7.2	7.6	8.0
	10	4.0	4.6	4.9	5.2	5.5	4.3	5.0	5.2	5.5	5.8	4.8	5.5	5.8	6.2	6.5	5.3	6.1	6.5	6.8	7.2	5.9	6.8	7.2	7.6	8.0
	15	3.9	4.5	4.7	5.0	5.3	4.1	4.8	5.1	5.3	5.7	4.6	5.4	5.7	6.0	6.3	5.1	6.0	6.3	6.6	7.0	5.7	6.6	7.0	7.4	7.8
	20	3.6	4.1	4.3	4.6	4.9	3.8	4.4	4.7	4.9	5.2	4.3	5.0	5.3	5.5	5.9	4.8	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
30	25	3.2	3.7	3.9	4.1	4.4	3.5	4.0	4.2	4.5	4.7	3.9	4.5	4.8	5.1	5.4	4.4	5.1	5.4	5.7	6.0	4.9	5.7	6.0	6.4	6.8
	30	2.6	3.0	3.2	3.4	3.6	2.9	3.3	3.5	3.7	4.0	3.3	3.8	4.1	4.3	4.5	3.8	4.4	4.6	4.9	5.2	4.3	5.0	5.2	5.5	5.9
	35	2.0	2.4	2.5	2.7	2.8	2.3	2.7	2.8	3.0	3.2	2.7	3.1	3.3	3.5	3.7	3.1	3.7	3.9	4.1	4.3	3.6	4.2	4.5	4.7	5.0
	40	1.4	1.7	1.8	1.9	2.1	1.6	2.0	2.1	2.2	2.4	2.1	2.4	2.6	2.7	2.9	2.5	2.9	3.1	3.3	3.5	2.9	3.4	3.6	3.9	4.1
	45	.8	1.0	1.1	1.2	1.3	1.0	1.3	1.4	1.5	1.6	1.4	1.7	1.8	1.9	2.1	1.8	2.2	2.3	2.5	2.6	2.3	2.7	2.8	3.0	3.2
	50	.2	.4	.4	.5	.5	.4	.6	.7	.7	.8	.8	1.0	1.1	1.2	1.3	1.2	1.5	1.6	1.7	1.8	1.6	1.9	2.1	2.2	2.3
	52	-.1	.0	.1	.1	.2	.1	.3	.3	.4	.4	.5	.7	.7	.8	.9	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9
	54	-.1	.0	.1	.1	.2	.1	.3	.3	.4	.4	.5	.7	.7	.8	.9	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9
	56	-.1	.0	.1	.1	.2	.1	.3	.3	.4	.4	.5	.7	.7	.8	.9	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9
	60	-.1	.0	.1	.1	.2	.1	.3	.3	.4	.4	.5	.7	.7	.8	.9	.9	1.1	1.2	1.3	1.4	1.3	1.6	1.7	1.8	1.9
40	-25	4.1	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.8	5.4	6.3	6.7	7.1	7.5	6.0	7.0	7.4	7.8	8.3
	-20	4.1	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.8	5.4	6.3	6.7	7.1	7.5	6.0	7.0	7.4	7.8	8.3
	-15	4.1	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.7	5.4	6.3	6.7	7.0	7.5	6.0	7.0	7.4	7.8	8.3
	-10	4.1	4.8	5.1	5.3	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.7	5.4	6.3	6.7	7.0	7.5	6.0	7.0	7.4	7.8	8.3
	-5	4.1	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.7	5.4	6.3	6.7	7.0	7.5	6.0	7.0	7.4	7.8	8.3
	0	4.1	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.0	6.4	6.7	5.5	6.3	6.7	7.0	7.5	6.0	7.0	7.4	7.8	8.2
	5	4.1	4.8	5.1	5.3	5.6	4.4	5.1	5.4	5.7	6.0	4.9	5.7	6.0	6.3	6.7	5.5	6.3	6.6	7.0	7.4	6.0	7.0	7.3	7.8	8.2
	10	4.1	4.8	5.0	5.3	5.6	4.4	5.1	5.4	5.7	6.0	4.9	5.7	6.0	6.3	6.7	5.5	6.3	6.6	7.0	7.4	6.0	7.0	7.3	7.7	8.2
	15	3.7	4.3	4.6	4.8	5.1	4.0	4.7	4.9	5.2	5.5	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.5	6.8	5.6	6.4	6.8	7.2	7.6
	20	3.2	3.8	4.0	4.2	4.4	3.5	4.1	4.3	4.5	4.8	4.0	4.6	4.9	5.1	5.4	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.5	6.8
50	25	2.7	3.2	3.3	3.5	3.7	3.0	3.4	3.6	3.8	4.1	3.4	4.0	4.2	4.4	4.7	3.9	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.7	6.0
	30	2.1	2.5	2.6	2.8	3.0	2.4	2.8	2.9	3.1	3.3	2.8	3.3	3.5	3.7	3.9	3.3	3.8	4.0	4.2	4.5	3.7	4.4	4.6	4.9	5.2
	35	1.6	1.8	2.0	2.1	2.2	1.8	2.1	2.2	2.4	2.5	2.2	2.6	2.7	2.9	3.1	2.6	3.1	3.3	3.5	3.7	3.1	3.6	3.8	4.0	4.3
	40	1.0	1.2	1.3	1.4	1.5	1.2	1.4	1.5	1.7	1.8	1.6	1.9	2.0	2.1	2.										

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		14000					13500					13000					12000					11000									
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS									
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
0	-25	6.3	7.4	7.8	8.3	8.8	6.9	8.1	8.6	9.1	9.8	7.6	8.9	9.5	10.1	10.7	9.1	10.7	11.4	12.1	12.9	10.9	12.7	13.4	14.2	15.2	10.9	12.7	13.4	14.2	15.2
	-20	6.3	7.3	7.8	8.3	8.8	6.9	8.1	8.6	9.1	9.7	7.6	8.9	9.4	10.0	10.7	9.2	10.7	11.3	12.0	12.8	10.9	12.7	13.4	14.2	15.1	10.9	12.7	13.4	14.2	15.1
	-15	6.3	7.4	7.8	8.3	8.8	6.9	8.1	8.6	9.1	9.7	7.6	8.9	9.4	10.0	10.7	9.2	10.7	11.3	12.0	12.8	10.9	12.7	13.4	14.2	15.1	10.9	12.7	13.4	14.2	15.1
	-10	6.3	7.4	7.8	8.3	8.8	6.9	8.1	8.6	9.1	9.7	7.6	8.9	9.5	10.0	10.7	9.2	10.7	11.3	12.0	12.8	10.9	12.7	13.4	14.2	15.1	10.9	12.7	13.4	14.2	15.1
	-5	6.3	7.4	7.8	8.3	8.8	6.9	8.1	8.6	9.1	9.7	7.6	8.9	9.4	10.0	10.7	9.2	10.7	11.3	12.0	12.8	10.9	12.7	13.4	14.2	15.1	10.9	12.7	13.4	14.2	15.1
	0	6.3	7.3	7.8	8.2	8.7	6.9	8.1	8.6	9.1	9.6	7.6	8.9	9.4	10.0	10.6	9.2	10.7	11.3	12.0	12.7	10.9	12.7	13.4	14.2	15.0	10.9	12.7	13.4	14.2	15.0
	5	6.3	7.3	7.7	8.2	8.7	6.9	8.1	8.5	9.0	9.6	7.6	8.9	9.4	10.0	10.6	9.2	10.7	11.3	11.9	12.7	10.9	12.7	13.3	14.1	15.0	10.9	12.6	13.3	14.1	15.0
	10	6.3	7.3	7.7	8.2	8.7	6.9	8.1	8.5	9.0	9.6	7.6	8.9	9.4	9.9	10.6	9.2	10.7	11.3	11.9	12.7	10.9	12.6	13.3	14.1	14.9	10.9	12.6	13.3	14.1	14.9
	15	6.3	7.3	7.7	8.2	8.7	6.9	8.0	8.5	9.0	9.5	7.6	8.9	9.4	9.9	10.5	9.2	10.7	11.2	11.9	12.6	10.9	12.6	13.3	14.1	14.9	10.9	12.6	13.3	14.1	14.9
	20	6.1	7.1	7.5	7.9	8.4	6.8	7.9	8.3	8.8	9.3	7.4	8.7	9.1	9.7	10.3	9.0	10.4	11.0	11.7	12.4	10.8	12.4	13.1	13.8	14.6	10.8	12.4	13.1	13.8	14.6
	25	6.0	6.9	7.3	7.7	8.2	6.6	7.7	8.1	8.6	9.1	7.3	8.5	8.9	9.4	10.0	8.8	10.2	10.8	11.4	12.1	10.6	12.2	12.9	13.6	14.4	10.6	12.2	12.9	13.6	14.4
	30	5.4	6.3	6.6	7.0	7.4	6.0	7.0	7.4	7.8	8.3	6.7	7.7	8.2	8.6	9.2	8.1	9.4	10.0	10.6	11.2	9.9	11.4	12.0	12.7	13.5	9.9	11.4	12.0	12.7	13.5
	35	4.7	5.4	5.8	6.1	6.5	5.3	6.1	6.5	6.8	7.3	5.9	6.9	7.2	7.7	8.1	7.3	8.5	9.0	9.5	10.1	9.0	10.4	11.0	11.7	12.4	9.0	10.4	11.0	11.7	12.4
	40	4.0	4.6	4.9	5.2	5.5	4.5	5.3	5.6	5.9	6.3	5.1	6.0	6.3	6.7	7.1	6.4	7.5	8.0	8.4	9.0	8.0	9.4	9.9	10.5	11.2	8.0	9.4	9.9	10.5	11.2
	45	3.2	3.8	4.0	4.3	4.5	3.8	4.4	4.6	4.9	5.2	4.3	5.0	5.3	5.7	6.0	5.6	6.5	6.9	7.3	7.8	7.1	8.3	8.8	9.3	9.9	7.1	8.3	8.8	9.3	9.9
	50	2.5	3.0	3.2	3.4	3.6	3.0	3.5	3.8	4.0	4.2	3.5	4.2	4.4	4.7	5.0	4.7	5.6	5.9	6.2	6.7	6.2	7.2	7.7	8.1	8.7	6.2	7.2	7.7	8.1	8.7
	54	1.9	2.3	2.4	2.6	2.8	2.4	2.8	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.1	4.0	4.7	5.0	5.3	5.7	5.4	6.3	6.7	7.1	7.6	5.4	6.3	6.7	7.1	7.6
10	-25	6.4	7.5	8.0	8.4	9.0	7.1	8.3	8.8	9.3	9.9	7.8	9.1	9.6	10.2	10.9	9.3	10.9	11.5	12.2	13.0	11.1	12.9	13.6	14.4	15.3	11.1	12.9	13.6	14.4	15.3
	-20	6.4	7.5	7.9	8.4	9.0	7.1	8.3	8.7	9.3	9.9	7.8	9.1	9.6	10.2	10.9	9.3	10.9	11.5	12.2	13.0	11.1	12.9	13.6	14.4	15.3	11.1	12.9	13.6	14.4	15.3
	-15	6.4	7.5	7.9	8.4	9.0	7.1	8.3	8.7	9.3	9.9	7.8	9.1	9.6	10.2	10.9	9.4	10.9	11.5	12.2	13.0	11.1	12.9	13.6	14.4	15.2	11.1	12.9	13.6	14.4	15.2
	-10	6.5	7.5	7.9	8.4	9.0	7.1	8.3	8.7	9.3	9.9	7.8	9.1	9.6	10.2	10.8	9.4	10.9	11.5	12.2	13.0	11.1	12.9	13.6	14.4	15.2	11.1	12.9	13.6	14.4	15.2
	-5	6.5	7.5	7.9	8.4	8.9	7.1	8.3	8.7	9.3	9.8	7.8	9.1	9.6	10.2	10.8	9.4	10.9	11.5	12.2	12.9	11.1	12.9	13.6	14.3	15.2	11.1	12.9	13.6	14.3	15.2
	0	6.5	7.5	7.9	8.4	8.9	7.1	8.3	8.7	9.2	9.8	7.8	9.1	9.6	10.2	10.8	9.4	10.9	11.5	12.2	12.9	11.1	12.9	13.6	14.3	15.2	11.1	12.9	13.6	14.3	15.2
	5	6.5	7.5	7.9	8.4	8.9	7.1	8.3	8.7	9.2	9.8	7.8	9.1	9.6	10.1	10.8	9.4	10.9	11.5	12.1	12.9	11.1	12.8	13.5	14.3	15.1	11.1	12.8	13.5	14.3	15.1
	10	6.5	7.5	7.9	8.3	8.9	7.1	8.2	8.7	9.2	9.8	7.8	9.0	9.6	10.1	10.7	9.4	10.9	11.4	12.1	12.8	11.1	12.8	13.5	14.3	15.1	11.1	12.8	13.5	14.3	15.1
	15	6.3	7.3	7.7	8.1	8.6	6.9	8.1	8.5	9.0	9.5	7.6	8.9	9.3	9.9	10.5	9.2	10.7	11.2	11.9	12.6	11.0	12.6	13.3	14.0	14.9	11.0	12.6	13.3	14.0	14.9
	20	5.9	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.5	9.0	7.2	8.4	8.9	9.4	9.9	8.8	10.2	10.7	11.3	12.0	10.5	12.1	12.8	13.5	14.3	10.5	12.1	12.8	13.5	14.3
	25	5.5	6.4	6.7	7.1	7.6	6.1	7.1	7.5	7.9	8.4	6.8	7.9	8.3	8.8	9.3	8.3	9.6	10.1	10.7	11.4	10.0	11.6	12.2	12.9	13.7	10.0	11.6	12.2	12.9	13.7
	30	4.8	5.6	5.9	6.2	6.6	5.4	6.3	6.6	7.0	7.4	6.0	7.0	7.4	7.8	8.3	7.5	8.7	9.2	9.7	10.3	9.2	10.6	11.2	11.9	12.6	9.2	10.6	11.2	11.9	12.6
	35	4.1	4.8	5.1	5.4	5.7	4.7	5.5	5.8	6.1	6.5	5.3	6.2	6.5	6.9	7.3	6.6	7.7	8.2	8.7	9.2	8.3	9.6	10.2	10.8	11.5	8.3	9.6	10.2	10.8	11.5
	40	3.4	4.0	4.2	4.5	4.8	4.0	4.6	4.9	5.2	5.5	4.5	5.3	5.6	5.9	6.3	5.8	6.8	7.2	7.6	8.1	7.4	8.6	9.1	9.6	10.2	7.4	8.6	9.1	9.6	10.2
	45	2.7	3.2	3.4	3.6	3.8	3.2	3.8	4.0	4.3	4.5	3.8	4.4	4.7	5.0	5.3	5.0	5.8	6.2	6.5	7.0	6.4	7.5	8.0	8.5	9.0	6.4	7.5	8.0	8.5	9.0
	50	2.1	2.4	2.6	2.8	2.9	2.5	3.0	3.2	3.4	3.6	3.0	3.6	3.8	4.0	4.3	4.2	4.9	5.2	5.5	5.9	5.6	6.5	6.9	7.3	7.8	5.6	6.5	6.9	7.3	7.8
	52	1.7	2.1	2.2	2.3	2.5	2.2	2.6	2.8	2.9	3.1	2.7	3.2	3.4	3.6	3.8	3.8	4.5	4.7	5.0	5.4	5.1	6.0	6.4	6.8	7.2	5.1	6.0	6.4	6.8	7.2
20	-25	6.6	7.7	8.1	8.6	9.2	7.2	8.4	8.9	9.5	10.1	7.9	9.3	9.8	10.4	11.1	9.5	11.1	11.7	12.4	13.2	11.3	13.0	13.8	14.6	15.5	11.3	13.0	13.8	14.6	15.5
	-20	6.6	7.7	8.1	8.6	9.1	7.2	8.4	8.9	9.4	10.0	7.9	9.2	9.8	10.4	11.0	9.5	11.1	11.7	12.4	13.1	11.3	13.0	13.8	14.5	15.4	11.3	13.0	13.8	14.5	15.4
	-15	6.6	7.7	8.1	8.6	9.1	7.2	8.4	8.9	9.4	10.0	7.9	9.2	9.8	10.4	11.0	9.5	11.1	11.7	12.4	13.1	11.3	13.0	13.7	14.5	15.4	11.3	13.0	13.7	14.5	15.4
	-10	6.6	7.7	8.1	8.6	9.1	7.3	8.4	8.9	9.4	10.0	8.0	9.3	9.8	10.4	11.0	9.6	11.1	11.7	12.3	13.1	11.3	13.0	13.7	14.5	15.4	11.3	13.0	13.7	14.5	15.4
	-5	6.6	7.7	8.1	8.6	9.1	7.3	8.4	8.9	9.4	10.0	8.0	9.3	9.8	10.4	11.0	9.6	11.1	11.7	12.3	13.1	11.3	13.1	13.7	14.5	15.4	11.3	13.1	13.7	14.5	15.4
	0	6.6	7.7	8.1	8.6	9.1	7.3	8.4	8.9	9.4	10.0	8.0	9.3	9.8	10.3	11.0	9.6	11.1	11.7	12.3	13.1	11.3	13.1	13.7	14.5	15.3	11.3	13.1	13.7	14.5	15.3
	5	6.6	7.7	8.1	8.5	9.1	7.3	8.4	8.9	9.4	10.0	8.0	9.3	9.8	10.3	10.9	9.6	11.1	11.7	12.3	13.0	11.3	13.0	13.7	14.5	15.3	11.3	13.0	13.7	14.5	15.3
	10	6.6	7.7	8.1	8.5	9.0	7.3	8.4	8.9	9.4	9.9	8.0	9.2	9.7	10.3	10.9	9.6	11.1	11.6	12.3	13.0	11.3	13.0	13.7	14.4	15.3	11.3	13.0	13.7	14.4	15.3
	15	5.2	7.1	7.5</																											

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT
FLAPS - 15°CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS														
		16300					16000					15500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
4000	-30	4.3	5.0	5.3	5.6	6.0	4.6	5.4	5.7	6.0	6.4	5.1	6.0	6.3	6.6	7.0
	-25	4.3	5.0	5.3	5.6	5.9	4.6	5.4	5.6	6.0	6.3	5.1	5.9	6.3	6.6	7.0
	-20	4.3	5.0	5.3	5.6	5.9	4.6	5.4	5.7	6.0	6.3	5.1	5.9	6.3	6.6	7.0
	-15	4.4	5.0	5.3	5.6	5.9	4.6	5.4	5.7	6.0	6.3	5.1	5.9	6.3	6.6	7.0
	-10	4.4	5.0	5.3	5.6	5.9	4.6	5.4	5.6	6.0	6.3	5.1	5.9	6.3	6.6	7.0
	-5	4.4	5.0	5.3	5.6	5.9	4.6	5.4	5.6	5.9	6.3	5.1	5.9	6.2	6.6	7.0
	0	4.1	4.8	5.0	5.3	5.6	4.4	5.1	5.4	5.6	6.0	4.9	5.7	6.0	6.3	6.6
	5	3.9	4.4	4.7	4.9	5.2	4.1	4.8	5.0	5.3	5.6	4.6	5.3	5.6	5.9	6.2
	10	3.4	3.9	4.2	4.4	4.6	3.7	4.2	4.5	4.7	5.0	4.1	4.8	5.0	5.3	5.6
	15	2.8	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8
	20	2.3	2.7	2.8	3.0	3.2	2.5	3.0	3.1	3.3	3.5	3.0	3.5	3.6	3.8	4.1
	25	1.7	2.0	2.2	2.3	2.4	2.0	2.3	2.5	2.6	2.8	2.4	2.8	3.0	3.1	3.3
	30	1.2	1.4	1.5	1.6	1.7	1.4	1.7	1.8	1.9	2.0	1.8	2.1	2.3	2.4	2.6
	35	.7	.8	.9	1.0	1.1	.9	1.1	1.2	1.2	1.3	1.3	1.5	1.6	1.7	1.8
	40	.1	.2	.3	.4	.4	.3	.5	.5	.6	.6	.7	.9	1.0	1.0	1.1
5000	-30	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	-25	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	-20	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	-15	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	-10	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	-5	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	0	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	5	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	10	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	15	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	20	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	25	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	30	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	35	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
	40	-4	-4	-3	-3	-3	-2	-1	-1	-1	0	-1	.3	.3	.4	.4
6000	-30	4.5	5.2	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-25	4.5	5.2	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-20	4.5	5.2	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-15	4.5	5.2	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-10	4.5	5.2	5.5	5.8	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.2	6.5	6.9	7.3
	-5	4.0	4.6	4.9	5.1	5.4	4.3	5.0	5.2	5.5	5.8	4.8	5.5	5.8	6.1	6.5
	0	3.7	4.3	4.5	4.8	5.0	4.0	4.6	4.8	5.1	5.4	4.5	5.1	5.4	5.7	6.0
	5	3.4	3.9	4.1	4.4	4.6	3.7	4.2	4.5	4.7	5.0	4.1	4.8	5.0	5.3	5.6
	10	2.9	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.4	4.6	4.9
	15	2.3	2.7	2.9	3.0	3.2	2.6	3.0	3.2	3.3	3.5	3.0	3.5	3.7	3.9	4.1
	20	1.8	2.1	2.2	2.4	2.5	2.0	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4
	25	1.3	1.5	1.6	1.7	1.8	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.4	2.5	2.7
	30	.8	.9	1.0	1.1	1.2	1.0	1.2	1.3	1.4	1.5	1.4	1.6	1.7	1.8	2.0
	35	.2	.4	.4	.5	.5	.5	.6	.7	.7	.8	.8	1.0	1.1	1.2	1.3
	40	-.3	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.1	-.3	.4	.5	.5	.6
7000	-30	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	-25	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	-20	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	-15	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	-10	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	-5	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	0	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	5	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	10	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	15	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	20	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	25	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	30	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	35	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
	40	-7	-7	-7	-7	-7	-5	-5	-5	-5	-5	-2	-1	-1	-1	-1
8000	-30	4.6	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
	-25	4.6	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
	-20	4.6	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
	-15	4.6	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
	-10	4.6	5.3	5.6	5.9	6.2	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3
	-5	3.6	4.2	4.4	4.6	4.9	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	0	3.3	3.8	4.0	4.2	4.4	3.5	4.1	4.3	4.5	4.8	4.0	4.6	4.8	5.1	5.4
	5	2.9	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.9
	10	2.4	2.7	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.6	3.0	3.5	3.7	3.9	4.1
	15	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.9	2.5	2.9	3.1	3.3	3.4
	20	1.3	1.6	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.5	2.6	2.8
	25	.8	1.0	1.1	1.2	1.3	1.1	1.3	1.4	1.5	1.6	1.4	1.7	1.8	1.9	2.1
	30	.3	.5	.5	.6	.6	.6	.7	.8	.8	.9	.9	1.1	1.2	1.3	1.4
	35	-.2	-.1	-.1	-.1	0	.0	.1	.2	.2	.3	.4	.5	.6	.7	.7
	40	-.7	-.6	-.6	-.6	-.6	-.5	-.4	-.4	-.4	-.4	-.1	.0	.0	.1	.1
9000	-30	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	-25	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	-20	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	-15	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	-10	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	-5	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	0	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	5	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	10	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	15	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	20	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	25	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	30	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	35	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3
	40	-9	-9	-9	-9	-9	-7	-7	-7	-7	-7	-4	-3	-3	-3	-3

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-30 (Sheet 3 of 6)

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		14000					13500					13000					12000					11000									
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS									
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	6.9	8.0	8.4	8.9	9.4	7.5	8.7	9.2	9.8	10.4	8.2	9.6	10.1	10.7	11.4	9.8	11.4	12.0	12.7	13.4	11.6	13.4	14.1	14.8	15.7	11.6	13.4	14.1	14.8	15.7
	-25	6.8	7.9	8.4	8.9	9.4	7.5	8.7	9.2	9.7	10.3	8.2	9.5	10.1	10.6	11.3	9.8	11.4	12.0	12.6	13.4	11.6	13.3	14.0	14.8	15.7	11.6	13.3	14.0	14.8	15.7
	-20	6.9	7.9	8.4	8.9	9.4	7.5	8.7	9.2	9.7	10.3	8.2	9.5	10.1	10.6	11.3	9.8	11.4	12.0	12.6	13.4	11.6	13.3	14.0	14.8	15.6	11.6	13.3	14.0	14.8	15.6
	-15	6.9	7.9	8.4	8.9	9.4	7.5	8.7	9.2	9.7	10.3	8.2	9.5	10.1	10.6	11.3	9.9	11.4	12.0	12.6	13.4	11.6	13.4	14.0	14.8	15.6	11.6	13.4	14.0	14.8	15.6
	-10	6.9	7.9	8.4	8.8	9.3	7.5	8.7	9.2	9.7	10.3	8.2	9.5	10.0	10.6	11.2	9.9	11.4	11.9	12.6	13.3	11.6	13.3	14.0	14.8	15.6	11.6	13.3	14.0	14.8	15.6
	-5	6.9	7.9	8.3	8.8	9.3	7.5	8.7	9.2	9.7	10.2	8.2	9.5	10.0	10.6	11.2	9.9	11.3	11.9	12.6	13.3	11.6	13.3	14.0	14.7	15.6	11.6	13.3	14.0	14.7	15.6
	0	6.6	7.6	8.0	8.5	9.0	7.3	8.4	8.8	9.3	9.8	8.0	9.2	9.7	10.2	10.8	9.6	11.0	11.6	12.2	12.9	11.3	13.0	13.6	14.4	15.2	11.3	13.0	13.6	14.4	15.2
	5	6.3	7.2	7.6	8.0	8.5	6.9	8.0	8.4	8.9	9.4	7.6	8.8	9.3	9.8	10.3	9.2	10.6	11.1	11.7	12.4	11.0	12.6	13.2	13.9	14.7	11.0	12.6	13.2	13.9	14.7
	10	5.8	6.7	7.0	7.4	7.8	6.4	7.4	7.8	8.2	8.7	7.1	8.1	8.6	9.1	9.6	8.6	9.9	10.4	11.0	11.7	10.3	11.9	12.5	13.2	13.9	10.3	11.9	12.5	13.2	13.9
	15	5.1	5.9	6.2	6.6	6.9	5.7	6.6	6.9	7.3	7.8	6.3	7.3	7.7	8.2	8.6	7.8	9.0	9.5	10.0	10.6	9.5	11.0	11.6	12.2	12.9	9.5	11.0	11.6	12.2	12.9
	20	4.5	5.2	5.4	5.7	6.1	5.0	5.8	6.1	6.5	6.9	5.6	6.5	6.9	7.3	7.7	7.0	8.1	8.6	9.1	9.6	8.7	10.1	10.6	11.2	11.9	8.7	10.1	10.6	11.2	11.9
	25	3.8	4.4	4.7	4.9	5.2	4.4	5.1	5.3	5.6	6.0	4.9	5.7	6.0	6.4	6.8	6.3	7.3	7.7	8.1	8.6	7.8	9.1	9.6	10.2	10.8	7.8	9.1	9.6	10.2	10.8
	30	3.2	3.7	3.9	4.1	4.4	3.7	4.3	4.5	4.8	5.1	4.3	4.9	5.2	5.5	5.8	5.5	6.4	6.8	7.2	7.6	7.0	8.2	8.6	9.1	9.7	7.0	8.2	8.6	9.1	9.7
	35	2.6	3.0	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.2	3.6	4.2	4.4	4.7	5.0	4.8	5.6	5.9	6.2	6.6	6.2	7.3	7.7	8.1	8.6	6.2	7.3	7.7	8.1	8.6
	40	1.9	2.3	2.4	2.6	2.8	2.4	2.8	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.1	4.1	4.8	5.0	5.3	5.7	5.4	6.3	6.7	7.1	7.6	5.4	6.3	6.7	7.1	7.6
	45	1.3	1.6	1.7	1.8	2.0	1.8	2.1	2.3	2.4	2.6	2.3	2.7	2.8	3.0	3.2	3.4	3.9	4.2	4.4	4.7	4.6	5.4	5.7	6.1	6.5	4.6	5.4	5.7	6.1	6.5
	46	1.1	1.4	1.5	1.6	1.7	1.6	1.9	2.0	2.2	2.3	2.1	2.4	2.6	2.8	2.9	3.1	3.7	3.9	4.1	4.4	4.4	5.1	5.4	5.8	6.1	4.4	5.1	5.4	5.8	6.1
5000	-35	7.1	8.2	8.6	9.1	9.7	7.7	9.0	9.5	10.0	10.6	8.5	9.8	10.4	11.0	11.6	10.1	11.6	12.3	12.9	13.7	11.8	13.6	14.3	15.1	16.0	11.8	13.6	14.3	15.1	16.0
	-30	7.1	8.2	8.6	9.1	9.6	7.7	8.9	9.4	10.0	10.6	8.5	9.8	10.3	10.9	11.6	10.1	11.6	12.2	12.9	13.7	11.8	13.6	14.3	15.1	15.9	11.8	13.6	14.3	15.1	15.9
	-25	7.0	8.1	8.6	9.1	9.6	7.7	8.9	9.4	9.9	10.5	8.4	9.7	10.3	10.9	11.5	10.0	11.6	12.2	12.8	13.6	11.8	13.5	14.2	15.0	15.8	11.8	13.5	14.2	15.0	15.8
	-20	7.0	8.1	8.5	9.0	9.5	7.7	8.9	9.3	9.9	10.5	8.4	9.7	10.2	10.8	11.4	10.0	11.5	12.1	12.8	13.5	11.8	13.5	14.2	14.9	15.8	11.7	13.4	14.1	14.8	15.8
	-15	6.9	8.0	8.4	8.9	9.4	7.6	8.7	9.2	9.7	10.3	8.3	9.6	10.1	10.7	11.3	9.9	11.4	12.0	12.6	13.4	11.7	13.4	14.1	14.8	15.6	11.7	13.4	14.1	14.8	15.6
	-10	6.7	7.7	8.2	8.6	9.1	7.4	8.5	9.0	9.5	10.0	8.1	9.3	9.8	10.4	11.0	9.7	11.1	11.7	12.4	13.1	11.5	13.1	13.8	14.5	15.3	11.5	13.1	13.8	14.5	15.3
	-5	6.5	7.5	7.9	8.3	8.8	7.1	8.2	8.7	9.1	9.7	7.8	9.0	9.5	10.0	10.6	9.4	10.8	11.4	12.0	12.7	11.2	12.8	13.5	14.2	15.0	11.2	12.8	13.5	14.2	15.0
	0	6.1	7.1	7.4	7.8	8.3	6.8	7.8	8.2	8.6	9.1	7.4	8.6	9.0	9.5	10.1	9.0	10.4	10.9	11.5	12.2	10.8	12.3	13.0	13.7	14.4	10.8	12.3	13.0	13.7	14.4
	5	5.8	6.6	7.0	7.4	7.8	6.4	7.3	7.7	8.2	8.6	7.0	8.1	8.5	9.0	9.5	8.6	9.9	10.4	11.0	11.6	10.3	11.8	12.4	13.1	13.9	10.3	11.8	12.4	13.1	13.9
	10	5.1	5.9	6.2	6.6	6.9	5.7	6.6	7.0	7.3	7.8	6.4	7.4	7.7	8.2	8.6	7.8	9.0	9.5	10.0	10.6	9.6	11.0	11.6	12.2	12.9	9.6	11.0	11.6	12.2	12.9
	15	4.5	5.2	5.5	5.8	6.1	5.1	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.3	7.8	7.1	8.2	8.6	9.1	9.7	8.8	10.1	10.7	11.3	11.9	8.8	10.1	10.7	11.3	11.9
	20	3.9	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.7	6.1	5.0	5.8	6.1	6.5	6.9	6.4	7.4	7.8	8.2	8.7	8.0	9.2	9.7	10.3	10.9	8.0	9.2	9.7	10.3	10.9
	25	3.3	3.8	4.0	4.2	4.5	3.8	4.4	4.7	4.9	5.2	4.4	5.1	5.3	5.6	6.0	5.7	6.6	6.9	7.3	7.7	7.2	8.3	8.8	9.3	9.8	7.2	8.3	8.8	9.3	9.8
	30	2.7	3.1	3.3	3.5	3.7	3.2	3.7	3.9	4.1	4.4	3.7	4.3	4.6	4.8	5.1	4.9	5.7	6.0	6.4	6.8	6.4	7.4	7.8	8.3	8.8	6.4	7.4	7.8	8.3	8.8
	35	2.1	2.4	2.6	2.7	2.9	2.6	3.0	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.3	4.2	4.9	5.2	5.5	5.8	5.6	6.5	6.9	7.3	7.7	5.6	6.5	6.9	7.3	7.7
	40	1.5	1.8	1.9	2.0	2.1	1.9	2.3	2.4	2.6	2.7	2.4	2.9	3.0	3.2	3.4	3.5	4.1	4.4	4.6	4.9	4.8	5.6	6.0	6.3	6.7	4.8	5.6	6.0	6.3	6.7
	44	.9	1.2	1.2	1.3	1.4	1.4	1.6	1.8	1.9	2.0	1.8	2.2	2.3	2.5	2.6	2.9	3.4	3.6	3.8	4.1	4.1	4.8	5.1	5.4	5.8	4.1	4.8	5.1	5.4	5.8
6000	-35	7.3	8.4	8.9	9.4	9.9	7.9	9.2	9.7	10.2	10.8	8.7	10.0	10.6	11.2	11.8	10.3	11.9	12.5	13.2	13.9	12.1	13.8	14.5	15.3	16.2	12.1	13.8	14.5	15.3	16.2
	-30	7.3	8.4	8.8	9.3	9.9	7.9	9.2	9.6	10.2	10.8	8.7	10.0	10.5	11.1	11.8	10.3	11.8	12.4	13.1	13.8	12.1	13.8	14.5	15.3	16.1	12.1	13.8	14.5	15.3	16.1
	-25	7.2	8.3	8.7	9.2	9.7	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.7	10.2	11.7	12.3	13.0	13.7	12.0	13.7	14.4	15.2	16.0	12.0	13.7	14.4	15.2	16.0
	-20	7.1	8.2	8.6	9.1	9.6	7.8	9.0	9.5	10.0	10.6	8.5	9.8	10.4	10.9	11.5	10.2	11.7	12.2	12.9	13.6	11.9	13.6	14.3	15.0	15.9	11.9	13.6	14.3	15.0	15.9
	-15	6.8	7.8	8.2	8.7	9.2	7.5	8.6	9.0	9.5	10.1	8.2	9.4	9.9	10.5	11.1	9.8	11.2	11.8	12.4	13.1	11.6	13.2	13.9	14.6	15.4	11.6	13.2	13.9	14.6	15.4
	-10	6.4	7.4	7.8	8.2	8.6	7.1	8.1	8.5	9.0	9.5	7.7	8.9	9.4	9.9	10.5	9.3	10.7	11.3	11.9	12.6	11.1	12.7	13.3	14.0	14.8	11.1	12.7	13.3	14.0	14.8
	-5	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.5	9.0	7.3	8.4	8.9	9.4	9.9	8.9	10.2	10.7	11.3	12.0	10.6	12.2	12.8	13.5	14.2	10.6	12.2	12.8	13.5	14.2
	0	5.6	6.4	6.8	7.1	7.5	6.2	7.2	7.5	7.9	8.4	6.9	7.9	8.3	8.8	9.3	8.4	9.6	10.1	10.7	11.3	10.1	11.6	12.2	12.9	13.6	10.1	11.6	12.2	12.9	13.6
	5	5.1	5.9	6.2	6.																										

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
8000	-35	4.4	5.0	5.3	5.6	5.9	4.6	5.4	5.6	5.9	6.3	5.2	5.9	6.2	6.6	6.9	5.7	6.6	6.9	7.3	7.7	6.3	7.2	7.6	8.0	8.5
	-30	4.1	4.7	4.9	5.2	5.5	4.3	5.0	5.3	5.5	5.9	4.8	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.9	7.2	5.9	6.8	7.2	7.6	8.0
	-25	3.8	4.3	4.6	4.8	5.1	4.0	4.7	4.9	5.2	5.4	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.8	5.6	6.4	6.8	7.1	7.5
	-20	3.5	4.0	4.2	4.4	4.7	3.7	4.3	4.5	4.8	5.0	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.4	5.3	6.1	6.4	6.7	7.1
	-15	3.2	3.7	3.9	4.1	4.3	3.4	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3	4.4	5.1	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.6
	-10	2.9	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.2	5.5	4.6	5.3	5.5	5.8	6.2
	-5	2.6	3.0	3.1	3.3	3.5	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.8	5.0	4.2	4.9	5.1	5.4	5.7
	0	2.2	2.6	2.7	2.9	3.1	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.2
	5	1.8	2.1	2.3	2.4	2.5	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6
	10	1.4	1.7	1.8	1.9	2.0	1.6	1.9	2.0	2.2	2.3	2.0	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0
9000	-35	4.1	4.7	4.9	5.2	5.5	4.3	5.0	5.3	5.5	5.9	4.8	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.9	7.2	5.9	6.8	7.2	7.6	8.0
	-30	3.8	4.3	4.6	4.8	5.1	4.0	4.7	4.9	5.2	5.4	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.8	5.6	6.4	6.8	7.1	7.5
	-25	3.5	4.0	4.2	4.4	4.7	3.7	4.3	4.5	4.8	5.0	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.4	5.3	6.1	6.4	6.7	7.1
	-20	3.2	3.7	3.9	4.1	4.3	3.4	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3	4.4	5.1	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.6
	-15	2.9	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.2	5.5	4.6	5.3	5.5	5.8	6.2
	-10	2.6	3.0	3.1	3.3	3.5	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.8	5.0	4.2	4.9	5.1	5.4	5.7
	-5	2.2	2.6	2.7	2.9	3.1	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.2
	0	1.8	2.1	2.3	2.4	2.5	2.1	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6
	5	1.4	1.7	1.8	1.9	2.0	1.6	1.9	2.0	2.2	2.3	2.0	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0
	10	1.0	1.2	1.3	1.4	1.5	1.2	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.9	3.4	3.6	3.8	4.0
10000	-35	3.8	4.4	4.6	4.8	5.1	4.1	4.7	4.9	5.2	5.5	4.5	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.5	6.8	5.6	6.5	6.8	7.2	7.6
	-30	3.5	4.0	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.8	7.1
	-25	3.2	3.7	3.9	4.1	4.4	3.5	4.0	4.2	4.5	4.7	4.0	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7
	-20	2.9	3.4	3.6	3.8	4.0	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9	4.1	4.8	5.0	5.3	5.6	4.7	5.4	5.6	5.9	6.3
	-15	2.7	3.1	3.2	3.4	3.6	2.9	3.4	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.5	3.8	4.4	4.6	4.9	5.2	4.3	5.0	5.2	5.5	5.8
	-10	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.3	4.5	4.7	4.0	4.6	4.8	5.1	5.4
	-5	2.1	2.4	2.5	2.7	2.8	2.3	2.7	2.8	3.0	3.1	2.7	3.2	3.3	3.5	3.7	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9
	0	1.7	2.0	2.1	2.3	2.4	2.0	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.1	3.2	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4
	5	1.4	1.6	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.4	2.8	3.0	3.1	3.3	2.9	3.3	3.5	3.7	3.9
	10	1.0	1.2	1.2	1.3	1.4	1.2	1.4	1.5	1.6	1.7	1.6	1.8	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.4	2.8	3.0	3.1	3.3
11000	-35	3.5	4.1	4.3	4.5	4.8	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.8	7.1
	-30	3.2	3.7	3.9	4.1	4.4	3.5	4.0	4.2	4.5	4.7	4.0	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7
	-25	2.9	3.4	3.6	3.8	4.0	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9	4.1	4.8	5.0	5.3	5.6	4.7	5.4	5.6	5.9	6.3
	-20	2.7	3.1	3.2	3.4	3.6	2.9	3.4	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.5	3.8	4.4	4.6	4.9	5.2	4.3	5.0	5.2	5.5	5.8
	-15	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.3	4.5	4.7	4.0	4.6	4.8	5.1	5.4
	-10	2.1	2.4	2.5	2.7	2.8	2.3	2.7	2.8	3.0	3.1	2.7	3.2	3.3	3.5	3.7	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9
	-5	1.7	2.0	2.1	2.3	2.4	2.0	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.1	3.2	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4
	0	1.4	1.6	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.4	2.8	3.0	3.1	3.3	2.9	3.3	3.5	3.7	3.9
	5	1.0	1.2	1.2	1.3	1.4	1.2	1.4	1.5	1.6	1.7	1.6	1.8	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7	2.4	2.8	3.0	3.1	3.3
	10	.5	.6	.7	.8	.8	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.4	2.5	2.7
12000	-35	3.2	3.7	3.9	4.1	4.4	3.5	4.0	4.2	4.5	4.7	4.0	4.6	4.8	5.0	5.3	4.5	5.1	5.4	5.7	6.0	5.0	5.7	6.0	6.4	6.7
	-30	3.0	3.4	3.6	3.8	4.0	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.7	4.9	4.2	4.8	5.0	5.3	5.6	4.7	5.4	5.7	6.0	6.3
	-25	2.7	3.1	3.3	3.5	3.6	2.9	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.2	4.4	5.0	5.3	5.6	5.9
	-20	2.4	2.8	3.0	3.1	3.3	2.7	3.1	3.3	3.4	3.6	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.2	5.5
	-15	2.2	2.5	2.6	2.8	2.9	2.4	2.8	2.9	3.1	3.3	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	3.8	4.3	4.6	4.8	5.1
	-10	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.9	2.5	2.9	3.1	3.2	3.4	3.0	3.4	3.6	3.8	4.0	3.4	4.0	4.2	4.4	4.6
	-5	1.6	1.8	1.9	2.1	2.2	1.8	2.1	2.2	2.4	2.5	2.2	2.6	2.7	2.9	3.0	2.6	3.1	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.2
	0	1.2	1.5	1.6	1.7	1.8	1.5	1.7	1.8	2.0	2.1	1.9	2.2	2.3	2.4	2.6	2.3	2.7	2.8	3.0	3.1	2.8	3.2	3.4	3.5	3.7
	5	.9	1.1	1.2	1.3	1.4	1.1	1.4	1.5	1.5	1.7	1.5	1.8	1.9	2.0	2.2	1.9	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.1	3.3
	10	.5	.7	.7	.8	.8	.7	.9	1.0	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.5	1.8	1.9	2.0	2.1	1.9	2.3	2.4	2.5	2.7
13000	-35	2.9	3.4	3.6	3.8	4.0	3.0	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.5	4.0	4.2	4.4	4.6	3.9	4.4	4.6	4.8	5.0
	-30	2.7	3.2	3.4	3.6	3.8	2.8	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.2	3.3	3.8	4.0	4.2	4.4	3.8	4.3	4.6	4.8	5.1
	-25	2.4	2.9	3.1	3.3	3.5	2.5	3.0	3.2	3.4	3.6	2.8	3.3	3.5	3.7	3.9	3.0	3.5	3.7	3.9	4.1	3.4	4.0	4.2	4.4	4.6
	-20	2.1	2.6	2.8	3.0	3.2	2.2	2.7	2.9	3.1	3.3	2.5	3.0	3.2	3.4	3.6	2.7	3.2	3.4	3.6	3.8	3.4	4.0	4.2	4.4	4.6
	-15	1.8	2.3	2.5	2.7	2.9	1.9	2.4	2.6	2.8	3.0	2.2	2.7	2.9	3.1	3.3	2.4	2.9	3.1	3.3	3.5	3.8	4.4	4.6	4.8	

FIRST SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - DOWN
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		14000					13500					13000					12000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8000	-35	6.9	7.9	8.4	8.8	9.3	7.6	8.7	9.2	9.7	10.2	8.3	9.5	10.0	10.6	11.2	9.9	11.4	11.9	12.6	13.3
	-30	6.6	7.5	7.9	8.4	8.8	7.2	8.3	8.7	9.2	9.7	7.9	9.1	9.6	10.1	10.7	9.5	10.9	11.5	12.1	12.8
	-25	6.2	7.1	7.5	7.9	8.3	6.8	7.9	8.3	8.7	9.2	7.5	8.7	9.1	9.6	10.2	9.1	10.4	11.0	11.6	12.2
	-20	5.8	6.7	7.1	7.5	7.9	6.5	7.4	7.8	8.3	8.7	7.1	8.2	8.7	9.1	9.6	8.7	10.0	10.5	11.1	11.7
	-15	5.5	6.3	6.7	7.0	7.4	6.1	7.0	7.4	7.8	8.2	6.8	7.8	8.2	8.6	9.1	8.3	9.5	10.0	10.6	11.2
	-10	5.1	5.9	6.2	6.6	6.9	5.7	6.6	6.9	7.3	7.7	6.4	7.3	7.7	8.1	8.6	7.8	9.0	9.5	10.0	10.6
	-5	4.8	5.5	5.8	6.1	6.4	5.4	6.2	6.5	6.8	7.2	6.0	6.9	7.2	7.6	8.1	7.4	8.5	9.0	9.5	10.0
	0	4.4	5.0	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.7	5.6	6.4	6.7	7.1	7.5	6.9	8.0	8.4	8.9	9.4
	5	3.9	4.5	4.7	5.0	5.3	4.4	5.1	5.4	5.7	6.0	5.0	5.8	6.1	6.4	6.8	6.4	7.4	7.7	8.2	8.6
	10	3.4	4.0	4.2	4.4	4.6	4.0	4.6	4.8	5.1	5.4	4.5	5.2	5.5	5.8	6.1	5.8	6.7	7.1	7.4	7.9
	15	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.4	4.6	3.9	4.6	4.8	5.1	5.3	5.2	6.0	6.3	6.6	7.0
	20	2.3	2.7	2.9	3.0	3.2	2.8	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.6	4.5	5.2	5.5	5.8	6.2
	25	1.8	2.1	2.2	2.4	2.5	2.3	2.6	2.8	2.9	3.1	2.8	3.2	3.4	3.6	3.8	3.9	4.5	4.8	5.0	5.3
	30	1.2	1.5	1.6	1.7	1.8	1.7	2.0	2.1	2.2	2.4	2.2	2.5	2.7	2.8	3.0	3.2	3.8	4.0	4.2	4.5
	35	.7	.9	.9	1.0	1.1	1.1	1.3	1.4	1.5	1.6	1.6	1.9	2.0	2.1	2.2	2.6	3.0	3.2	3.4	3.6
	38	.3	.4	.5	.5	.6	.7	.9	1.0	1.0	1.1	1.1	1.4	1.5	1.6	1.7	2.2	2.5	2.7	2.9	3.0
9000	-35	6.2	7.2	7.5	7.9	8.4	6.9	7.9	8.3	8.8	9.3	7.6	8.7	9.2	9.7	10.2	9.1	10.5	11.0	11.6	12.3
	-30	5.9	6.8	7.1	7.5	7.9	6.5	7.5	7.9	8.3	8.8	7.2	8.3	8.7	9.2	9.7	8.7	10.0	10.6	11.1	11.8
	-25	5.6	6.4	6.7	7.1	7.5	6.2	7.1	7.5	7.9	8.3	6.8	7.9	8.3	8.7	9.2	8.3	9.6	10.1	10.6	11.2
	-20	5.2	6.0	6.3	6.6	7.0	5.8	6.7	7.0	7.4	7.8	6.5	7.4	7.8	8.3	8.7	7.9	9.1	9.6	10.1	10.7
	-15	4.9	5.6	5.9	6.2	6.6	5.5	6.3	6.6	7.0	7.4	6.1	7.0	7.4	7.8	8.2	7.5	8.7	9.1	9.6	10.2
	-10	4.5	5.2	5.5	5.8	6.1	5.1	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.3	7.7	7.1	8.2	8.6	9.1	9.6
	-5	4.2	4.8	5.1	5.3	5.6	4.7	5.5	5.7	6.0	6.4	5.3	6.2	6.5	6.8	7.2	6.7	7.7	8.1	8.6	9.1
	0	3.8	4.4	4.6	4.8	5.1	4.3	5.0	5.2	5.5	5.8	4.9	5.7	6.0	6.3	6.6	6.2	7.2	7.6	8.0	8.4
	5	3.4	3.9	4.1	4.3	4.5	3.9	4.5	4.7	5.0	5.2	4.4	5.1	5.4	5.7	6.0	5.7	6.6	7.0	7.3	7.8
	10	2.9	3.4	3.5	3.7	3.9	3.4	3.9	4.1	4.4	4.6	4.0	4.6	4.8	5.1	5.4	5.2	6.0	6.3	6.6	7.0
	15	2.4	2.8	2.9	3.1	3.3	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.4	4.6	4.6	5.3	5.6	5.9	6.2
	20	1.8	2.2	2.3	2.4	2.6	2.3	2.7	2.8	3.0	3.2	2.8	3.3	3.5	3.6	3.9	4.0	4.6	4.8	5.1	5.4
	25	1.3	1.5	1.6	1.8	1.9	1.7	2.1	2.2	2.3	2.5	2.2	2.6	2.8	2.9	3.1	3.3	3.9	4.1	4.3	4.6
	30	.8	.9	1.0	1.1	1.2	1.2	1.4	1.5	1.6	1.7	1.7	2.0	2.1	2.2	2.3	2.7	3.1	3.3	3.5	3.7
	35	.2	.4	.4	.5	.5	.6	.8	.9	1.0	1.0	1.1	1.3	1.4	1.5	1.6	2.1	2.5	2.6	2.8	2.9
	36	.1	.2	.2	.3	.3	.5	.6	.7	.8	.8	.9	1.1	1.2	1.3	1.4	1.9	2.2	2.4	2.5	2.7
10000	-35	5.6	6.4	6.7	7.1	7.5	6.2	7.1	7.5	7.9	8.3	6.8	7.9	8.3	8.7	9.2	8.3	9.6	10.1	10.7	11.3
	-30	5.2	6.0	6.3	6.7	7.1	5.8	6.7	7.1	7.5	7.9	6.5	7.5	7.9	8.3	8.8	8.0	9.2	9.6	10.2	10.8
	-25	4.9	5.7	5.9	6.3	6.6	5.5	6.3	6.7	7.0	7.4	6.1	7.1	7.4	7.8	8.3	7.6	8.7	9.2	9.7	10.2
	-20	4.6	5.3	5.6	5.9	6.2	5.2	6.0	6.3	6.6	7.0	5.8	6.7	7.0	7.4	7.8	7.2	8.3	8.7	9.2	9.7
	-15	4.3	4.9	5.2	5.5	5.8	4.8	5.6	5.9	6.2	6.5	5.5	6.3	6.6	7.0	7.3	6.8	7.9	8.3	8.7	9.2
	-10	3.9	4.5	4.8	5.0	5.3	4.5	5.2	5.4	5.7	6.0	5.1	5.9	6.2	6.5	6.8	6.4	7.4	7.8	8.2	8.7
	-5	3.6	4.2	4.4	4.6	4.9	4.1	4.8	5.0	5.3	5.6	4.7	5.4	5.7	6.0	6.4	6.0	6.9	7.3	7.7	8.1
	0	3.2	3.7	3.9	4.1	4.4	3.8	4.3	4.6	4.8	5.1	4.3	5.0	5.2	5.5	5.8	5.6	6.4	6.8	7.1	7.5
	5	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.3	4.6	3.9	4.5	4.7	5.0	5.3	5.1	5.9	6.2	6.6	6.9
	10	2.4	2.8	2.9	3.1	3.3	2.9	3.3	3.5	3.7	3.9	3.4	3.9	4.1	4.4	4.6	4.6	5.3	5.6	5.9	6.2
	15	1.9	2.2	2.3	2.5	2.6	2.3	2.7	2.9	3.0	3.2	2.9	3.3	3.5	3.7	3.9	4.0	4.6	4.9	5.1	5.4
	20	1.3	1.6	1.7	1.8	1.9	1.8	2.1	2.2	2.4	2.5	2.3	2.7	2.8	3.0	3.2	3.4	3.9	4.1	4.4	4.6
	25	.8	1.0	1.1	1.2	1.3	1.3	1.5	1.6	1.7	1.8	1.7	2.0	2.2	2.3	2.4	2.8	3.2	3.4	3.6	3.8
	30	.3	.4	.5	.5	.6	.7	.9	1.0	1.0	1.1	1.2	1.4	1.5	1.6	1.7	2.2	2.6	2.7	2.9	3.0
	34	-.2	-.1	-.1	.0	.0	.2	.4	.4	.5	.5	.7	.9	.9	1.0	1.1	1.6	2.0	2.1	2.2	2.4

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.



Figure 4-30 (Sheet 6 of 6)

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT
FLAPS - 7⁰**CONDITIONS: ANTI-ICE SYSTEMS - OFF ***
LANDING GEAR - UP
AIRSPEED - V2**SPEEDBRAKES - RETRACT**
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	5.7	6.7	7.0	7.4	7.9	6.0	7.0	7.4	7.8	8.3	6.5	7.5	8.0	8.4	8.9	7.0	8.2	8.6	9.1	9.7	7.6	8.8	9.3	9.9	10.5
	-20	5.7	6.7	7.0	7.4	7.8	6.0	7.0	7.4	7.8	8.2	6.5	7.5	8.0	8.4	8.9	7.0	8.2	8.6	9.1	9.7	7.6	8.8	9.3	9.9	10.5
	-15	5.8	6.7	7.0	7.4	7.8	6.0	7.0	7.4	7.8	8.2	6.5	7.5	8.0	8.4	8.9	7.1	8.2	8.6	9.1	9.7	7.6	8.8	9.3	9.9	10.5
	-10	5.8	6.7	7.0	7.4	7.8	6.1	7.0	7.4	7.8	8.2	6.5	7.6	8.0	8.4	8.9	7.1	8.2	8.6	9.1	9.7	7.6	8.8	9.3	9.9	10.5
	-5	5.8	6.7	7.0	7.4	7.8	6.1	7.0	7.4	7.8	8.2	6.5	7.6	8.0	8.4	8.9	7.1	8.2	8.6	9.1	9.6	7.7	8.8	9.3	9.8	10.4
	0	5.8	6.7	7.0	7.4	7.8	6.1	7.0	7.3	7.7	8.2	6.5	7.5	7.9	8.4	8.9	7.1	8.2	8.6	9.1	9.6	7.6	8.8	9.3	9.8	10.4
	5	5.8	6.6	7.0	7.4	7.8	6.1	7.0	7.3	7.7	8.2	6.5	7.5	7.9	8.4	8.8	7.1	8.1	8.6	9.0	9.6	7.6	8.8	9.3	9.8	10.4
	10	5.8	6.6	7.0	7.3	7.7	6.0	6.9	7.3	7.7	8.1	6.5	7.5	7.9	8.3	8.8	7.1	8.1	8.6	9.0	9.5	7.6	8.8	9.3	9.8	10.3
	15	5.8	6.6	6.9	7.3	7.7	6.0	6.9	7.3	7.7	8.1	6.5	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.6	8.8	9.2	9.7	10.3
	20	5.6	6.5	6.8	7.1	7.5	5.9	6.8	7.1	7.5	7.9	6.4	7.3	7.7	8.1	8.6	6.9	7.9	8.4	8.8	9.3	7.5	8.6	9.0	9.5	10.1
10	25	5.5	6.3	6.6	7.0	7.3	5.8	6.6	7.0	7.3	7.7	6.3	7.2	7.5	7.9	8.4	6.8	7.8	8.2	8.6	9.1	7.3	8.4	8.9	9.3	9.9
	30	5.0	5.7	6.0	6.3	6.7	5.3	6.1	6.4	6.7	7.1	5.7	6.6	6.9	7.3	7.7	6.2	7.2	7.5	7.9	8.4	6.8	7.8	8.2	8.6	9.1
	35	4.4	5.1	5.3	5.6	5.9	4.7	5.4	5.6	5.9	6.3	5.1	5.9	6.2	6.5	6.8	5.6	6.4	6.7	7.1	7.5	6.1	7.0	7.3	7.7	8.2
	40	3.8	4.4	4.6	4.8	5.1	4.0	4.7	4.9	5.1	5.4	4.5	5.1	5.4	5.7	6.0	4.9	5.6	5.9	6.3	6.6	5.4	6.2	6.5	6.9	7.3
	45	3.2	3.7	3.9	4.1	4.3	3.4	3.9	4.1	4.4	4.6	3.8	4.4	4.6	4.9	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3
	50	2.6	3.0	3.1	3.3	3.5	2.8	3.2	3.4	3.6	3.8	3.2	3.7	3.8	4.1	4.3	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.9	5.1	5.4
	54	2.0	2.4	2.5	2.7	2.8	2.2	2.6	2.8	2.9	3.1	2.6	3.0	3.2	3.4	3.6	3.0	3.5	3.6	3.9	4.1	3.4	3.9	4.1	4.4	4.6
	58	1.4	1.8	1.9	2.1	2.2	1.6	2.0	2.2	2.3	2.5	2.0	2.4	2.6	2.8	3.0	2.4	2.9	3.0	3.3	3.5	2.8	3.3	3.5	3.7	3.9
	62	0.8	1.2	1.3	1.5	1.6	1.0	1.4	1.6	1.7	1.9	1.4	1.8	2.0	2.2	2.4	1.8	2.3	2.4	2.7	2.9	2.2	2.7	2.9	3.1	3.3
	66	0.2	0.6	0.7	0.9	1.0	0.4	0.8	1.0	1.1	1.3	0.8	1.2	1.4	1.6	1.8	1.2	1.7	1.8	2.1	2.3	1.6	2.1	2.3	2.5	2.7
20	-25	5.9	6.8	7.2	7.6	8.0	6.2	7.1	7.5	7.9	8.4	6.7	7.7	8.1	8.6	9.1	7.2	8.3	8.8	9.3	9.8	7.8	9.0	9.5	10.0	10.6
	-20	5.9	6.8	7.2	7.6	8.0	6.2	7.1	7.5	7.9	8.4	6.7	7.7	8.1	8.6	9.1	7.2	8.3	8.8	9.3	9.8	7.8	9.0	9.5	10.0	10.6
	-15	5.9	6.8	7.2	7.5	8.0	6.2	7.1	7.5	7.9	8.4	6.7	7.7	8.1	8.6	9.1	7.2	8.3	8.8	9.3	9.8	7.8	9.0	9.5	10.0	10.6
	-10	5.9	6.8	7.2	7.5	8.0	6.2	7.1	7.5	7.9	8.4	6.7	7.7	8.1	8.6	9.0	7.2	8.3	8.8	9.3	9.8	7.8	9.0	9.5	10.0	10.6
	-5	5.9	6.8	7.2	7.5	8.0	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.5	9.0	7.2	8.3	8.8	9.2	9.8	7.8	9.0	9.5	10.0	10.6
	0	5.9	6.8	7.1	7.5	7.9	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.5	9.0	7.2	8.3	8.8	9.2	9.8	7.8	9.0	9.5	10.0	10.6
	5	5.9	6.8	7.1	7.5	7.9	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.5	9.0	7.2	8.3	8.7	9.2	9.7	7.8	9.0	9.4	10.0	10.5
	10	5.9	6.8	7.1	7.5	7.9	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.5	9.0	7.2	8.3	8.7	9.2	9.7	7.8	9.0	9.4	9.9	10.5
	15	5.8	6.6	7.0	7.3	7.7	6.1	6.9	7.3	7.7	8.1	6.6	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.7	8.8	9.2	9.7	10.3
	20	5.5	6.3	6.6	6.9	7.3	5.7	6.6	6.9	7.3	7.7	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
30	25	5.1	5.9	6.1	6.5	6.8	5.4	6.2	6.5	6.8	7.2	5.8	6.7	7.0	7.4	7.8	6.3	7.3	7.6	8.0	8.5	6.9	7.9	8.3	8.7	9.2
	30	4.5	5.2	5.5	5.7	6.0	4.8	5.5	5.8	6.1	6.4	5.2	6.0	6.3	6.6	7.0	5.7	6.5	6.9	7.2	7.6	6.2	7.1	7.5	7.9	8.3
	35	3.9	4.5	4.8	5.0	5.3	4.2	4.8	5.0	5.3	5.6	4.6	5.3	5.6	5.9	6.2	5.1	5.8	6.1	6.4	6.8	5.5	6.4	6.7	7.1	7.4
	40	3.3	3.8	4.0	4.3	4.5	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.8	5.1	5.3	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.6
	45	2.7	3.2	3.3	3.5	3.7	3.0	3.4	3.6	3.8	4.0	3.3	3.9	4.1	4.3	4.5	3.8	4.3	4.6	4.8	5.1	4.2	4.8	5.1	5.4	5.7
	50	2.2	2.5	2.6	2.8	3.0	2.4	2.7	2.9	3.1	3.2	2.7	3.2	3.3	3.5	3.7	3.1	3.6	3.8	4.0	4.2	3.5	4.1	4.3	4.5	4.8
	52	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.9	2.4	2.8	3.0	3.1	3.3	2.8	3.3	3.4	3.6	3.8	3.2	3.7	3.9	4.1	4.4
	56	1.3	1.6	1.7	1.9	2.0	1.5	1.8	2.0	2.1	2.3	1.8	2.2	2.4	2.5	2.7	2.2	2.6	2.7	2.9	3.1	2.5	3.0	3.2	3.4	3.7
	60	0.7	1.0	1.1	1.3	1.4	0.9	1.2	1.4	1.5	1.7	1.2	1.6	1.8	1.9	2.1	1.6	2.0	2.1	2.3	2.5	1.9	2.4	2.6	2.8	3.1
	64	0.1	0.5	0.6	0.8	0.9	0.3	0.7	0.9	1.0	1.2	0.7	1.1	1.3	1.4	1.6	1.1	1.5	1.6	1.8	2.0	1.3	1.8	2.0	2.2	2.5
40	-25	6.0	6.9	7.3	7.7	8.2	6.3	7.3	7.7	8.1	8.5	6.8	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	10.0	7.9	9.2	9.7	10.2	10.8
	-20	6.0	6.9	7.3	7.7	8.1	6.3	7.3	7.6	8.1	8.5	6.8	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	10.0	7.9	9.2	9.6	10.2	10.8
	-15	6.0	6.9	7.3	7.7	8.1	6.3	7.3	7.6	8.1	8.5	6.8	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	10.0	7.9	9.2	9.6	10.2	10.8
	-10	6.0	6.9	7.3	7.7	8.1	6.3	7.3	7.6	8.0	8.5	6.8	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.2	10.7
	-5	6.1	6.9	7.3	7.7	8.1	6.3	7.3	7.6	8.0	8.5	6.8	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.2	10.7
	0	6.1	7.0	7.3	7.7	8.1	6.4	7.3	7.6	8.0	8.5	6.9	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.2	10.7
	5	6.1	6.9	7.3	7.7	8.1	6.4	7.3	7.6	8.0	8.5	6.9	7.9	8.2	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.1	10.7
	10	6.1	6.9	7.3	7.6	8.1	6.4	7.3	7.6	8.0	8.4	6.9	7.8	8.2	8.7	9.1	7.4	8.5	8.9	9.4	9.9	8.0	9.1	9.6	10.1	10.7
	15	5.7	6.5	6.8	7.1	7.5	6.0	6.8	7.1	7.5	7.9	6.4	7.4	7.7	8.1	8.6	7.0	8.0	8.4	8.8	9.3	7.5	8.6	9.1	9.5	10.0
	20	5.2	5.9	6.2	6.5	6.9	5.4	6.2	6.5	6.9	7.2	5.9	6.8	7.1	7.5	7.9	6.4	7.3	7.7	8.1	8.5	6.9	8.0	8.4	8.8	9.3
50	25	4.6	5.3	5.6	5.8	6.2	4.9	5.6	5.9	6.2	6.5	5.3	6.1	6.4	6.7	7.1	5.8	6.7	7.0	7.4	7.8	6.3	7.3	7.6	8.0	8.5
	30	4.1	4.6	4.9	5.1	5.4	4.3	4.9	5.2	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	5.9	6.2	6.6	6.9	5.7	6.5	6.8	7.2	7.6
	35	3.5	4.0	4.2	4.4																					

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	8.2	9.6	10.1	10.7	11.4	8.9	10.3	10.9	11.6	12.3	9.6	11.1	11.8	12.5	13.3	11.2	13.1	13.8	14.7	15.6	13.2	15.3	16.2	17.1	18.2
	-20	8.2	9.5	10.1	10.7	11.3	8.9	10.3	10.9	11.5	12.3	9.6	11.1	11.8	12.5	13.3	11.3	13.1	13.8	14.6	15.6	13.2	15.3	16.1	17.1	18.1
	-15	8.2	9.5	10.1	10.7	11.3	8.9	10.3	10.9	11.5	12.2	9.6	11.1	11.8	12.5	13.3	11.3	13.1	13.8	14.6	15.5	13.2	15.3	16.1	17.1	18.1
	-10	8.3	9.6	10.1	10.7	11.3	8.9	10.3	10.9	11.5	12.2	9.6	11.2	11.8	12.5	13.2	11.3	13.1	13.8	14.6	15.5	13.3	15.3	16.1	17.1	18.1
	-5	8.3	9.6	10.1	10.7	11.3	8.9	10.3	10.9	11.5	12.2	9.6	11.2	11.8	12.5	13.2	11.3	13.1	13.8	14.6	15.5	13.3	15.3	16.1	17.0	18.0
	0	8.3	9.5	10.1	10.6	11.3	8.9	10.3	10.9	11.5	12.2	9.6	11.1	11.7	12.4	13.2	11.3	13.1	13.8	14.6	15.4	13.3	15.3	16.1	17.0	18.0
	5	8.3	9.5	10.0	10.6	11.2	8.9	10.3	10.8	11.5	12.1	9.6	11.1	11.7	12.4	13.1	11.3	13.1	13.8	14.5	15.4	13.3	15.3	16.1	17.0	17.9
	10	8.2	9.5	10.0	10.6	11.2	8.9	10.3	10.8	11.4	12.1	9.6	11.1	11.7	12.4	13.1	11.3	13.0	13.7	14.5	15.4	13.3	15.3	16.0	16.9	17.9
	15	8.2	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.1	9.6	11.1	11.7	12.3	13.1	11.3	13.0	13.7	14.5	15.3	13.3	15.2	16.0	16.9	17.8
	20	8.1	9.3	9.8	10.3	10.9	8.7	10.1	10.6	11.2	11.8	9.4	10.9	11.5	12.1	12.8	11.1	12.8	13.5	14.2	15.0	13.1	15.0	15.8	16.6	17.6
	25	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.6	9.3	10.7	11.2	11.9	12.5	10.9	12.6	13.2	13.9	14.8	12.9	14.8	15.5	16.4	17.3
	30	7.3	8.4	8.9	9.4	9.9	8.0	9.2	9.6	10.2	10.7	8.6	9.9	10.5	11.0	11.7	10.1	11.7	12.3	13.0	13.8	12.1	13.9	14.6	15.4	16.3
	35	6.6	7.6	8.0	8.4	8.9	7.2	8.3	8.7	9.2	9.7	7.8	9.0	9.5	10.1	10.6	9.3	10.7	11.3	11.9	12.7	11.1	12.8	13.5	14.2	15.1
	40	5.9	6.8	7.1	7.5	8.0	6.4	7.4	7.8	8.3	8.7	7.0	8.1	8.6	9.0	9.6	8.4	9.7	10.3	10.8	11.5	10.0	11.6	12.3	13.0	13.8
	45	5.2	6.0	6.3	6.6	7.0	5.7	6.6	6.9	7.3	7.7	6.2	7.2	7.6	8.0	8.5	7.5	8.7	9.2	9.7	10.3	9.1	10.5	11.1	11.7	12.5
	50	4.4	5.1	5.4	5.7	6.0	4.9	5.7	6.0	6.3	6.7	5.5	6.3	6.7	7.0	7.5	6.7	7.7	8.1	8.6	9.1	8.1	9.4	10.0	10.5	11.2
	54	3.8	4.4	4.7	4.9	5.2	4.3	5.0	5.3	5.6	5.9	4.8	5.6	5.9	6.2	6.6	6.0	6.9	7.3	7.7	8.2	7.3	8.5	9.0	9.5	10.1
10	-25	8.4	9.7	10.3	10.8	11.5	9.0	10.5	11.1	11.7	12.4	9.7	11.3	12.0	12.7	13.5	11.5	13.3	14.0	14.8	15.8	13.4	15.5	16.3	17.3	18.3
	-20	8.4	9.7	10.2	10.8	11.5	9.0	10.5	11.1	11.7	12.4	9.7	11.3	11.9	12.6	13.4	11.5	13.3	14.0	14.8	15.7	13.4	15.5	16.3	17.2	18.3
	-15	8.4	9.7	10.2	10.8	11.5	9.1	10.5	11.1	11.7	12.4	9.8	11.3	11.9	12.6	13.4	11.5	13.3	14.0	14.8	15.7	13.5	15.5	16.3	17.2	18.2
	-10	8.4	9.7	10.2	10.8	11.5	9.1	10.5	11.1	11.7	12.4	9.8	11.3	11.9	12.6	13.4	11.5	13.3	14.0	14.8	15.7	13.5	15.5	16.3	17.2	18.2
	-5	8.4	9.7	10.2	10.8	11.4	9.1	10.5	11.1	11.7	12.4	9.8	11.3	11.9	12.6	13.4	11.5	13.3	14.0	14.8	15.7	13.5	15.5	16.3	17.2	18.2
	0	8.4	9.7	10.2	10.8	11.4	9.1	10.5	11.0	11.7	12.3	9.8	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.6	13.5	15.5	16.3	17.2	18.2
	5	8.4	9.7	10.2	10.8	11.4	9.1	10.5	11.0	11.6	12.3	9.8	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.7	15.6	13.5	15.5	16.3	17.2	18.1
	10	8.4	9.7	10.2	10.7	11.3	9.1	10.5	11.0	11.6	12.3	9.8	11.3	11.9	12.5	13.3	11.5	13.3	13.9	14.7	15.5	13.5	15.5	16.3	17.1	18.1
	15	8.3	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.0	9.6	11.1	11.7	12.3	13.0	11.3	13.0	13.7	14.4	15.3	13.5	15.2	16.0	16.9	17.8
	20	7.9	9.1	9.5	10.0	10.6	8.5	9.8	10.3	10.9	11.5	9.2	10.6	11.2	11.8	12.5	10.9	12.5	13.1	13.9	14.7	12.8	14.7	15.4	16.3	17.2
	25	7.5	8.6	9.0	9.5	10.0	8.1	9.3	9.8	10.3	10.9	8.8	10.1	10.6	11.2	11.8	10.3	11.9	12.5	13.2	14.0	12.2	14.1	14.8	15.6	16.5
	30	6.8	7.8	8.2	8.6	9.1	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.7	10.2	10.8	9.5	10.9	11.5	12.1	12.8	11.3	13.0	13.7	14.4	15.3
	35	6.1	7.0	7.3	7.7	8.2	6.6	7.6	8.0	8.5	8.9	7.2	8.3	8.8	9.3	9.8	8.6	10.0	10.5	11.1	11.7	10.3	11.9	12.5	13.2	14.0
	40	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	8.0	6.5	7.4	7.8	8.3	8.8	7.8	9.0	9.5	10.0	10.6	9.3	10.8	11.4	12.1	12.8
	45	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0	5.7	6.6	6.9	7.3	7.7	6.9	8.0	8.4	8.9	9.4	8.4	9.7	10.3	10.9	11.5
	50	4.0	4.6	4.8	5.1	5.4	4.5	5.1	5.4	5.7	6.0	5.0	5.7	6.0	6.4	6.8	6.1	7.1	7.5	7.9	8.4	7.5	8.7	9.2	9.7	10.3
	52	3.6	4.2	4.4	4.7	5.0	4.1	4.8	5.0	5.3	5.6	4.6	5.3	5.6	5.9	6.3	5.7	6.6	7.0	7.4	7.8	7.1	8.2	8.7	9.2	9.7
20	-25	8.5	9.9	10.4	11.0	11.7	9.2	10.7	11.2	11.9	12.6	9.9	11.5	12.1	12.8	13.6	11.7	13.5	14.2	15.0	15.9	13.6	15.7	16.5	17.5	18.5
	-20	8.6	9.9	10.4	11.0	11.6	9.2	10.7	11.2	11.9	12.6	9.9	11.5	12.1	12.8	13.6	11.7	13.5	14.2	15.0	15.9	13.7	15.7	16.5	17.4	18.4
	-15	8.6	9.9	10.4	11.0	11.6	9.2	10.7	11.2	11.9	12.6	9.9	11.5	12.1	12.8	13.6	11.7	13.5	14.2	15.0	15.9	13.7	15.7	16.5	17.4	18.4
	-10	8.6	9.9	10.4	11.0	11.6	9.2	10.7	11.2	11.8	12.5	10.0	11.5	12.1	12.8	13.5	11.7	13.5	14.2	15.0	15.8	13.7	15.7	16.5	17.4	18.4
	-5	8.6	9.9	10.4	11.0	11.6	9.3	10.7	11.2	11.8	12.5	10.0	11.5	12.1	12.8	13.5	11.7	13.5	14.2	15.0	15.8	13.7	15.7	16.5	17.4	18.4
	0	8.6	9.9	10.4	11.0	11.6	9.3	10.7	11.2	11.8	12.5	10.0	11.5	12.1	12.8	13.5	11.8	13.5	14.2	15.0	15.8	13.7	15.7	16.5	17.4	18.3
	5	8.6	9.9	10.4	10.9	11.6	9.3	10.7	11.2	11.8	12.5	10.0	11.5	12.1	12.8	13.5	11.8	13.5	14.2	14.9	15.8	13.7	15.7	16.5	17.4	18.3
	10	8.6	9.9	10.4	10.9	11.5	9.3	10.6	11.2	11.8	12.4	10.0	11.5	12.1	12.7	13.4	11.8	13.5	14.2	14.9	15.7	13.7	15.7	16.5	17.3	18.3
	15	8.1	9.3	9.8	10.3	10.9	8.8	10.1	10.6	11.2	11.8	9.5	10.9	11.5	12.1	12.8	11.2	12.8	13.5	14.2	15.0	13.1	15.0	15.8	16.6	17.5
	20	7.5	8.6	9.1	9.6	10.1	8.2	9.4	9.8	10.4	11.0	8.8	10.2	10.7	11.3	11.9	10.4	12.0	12.6	13.3	14.0	12.3	14.1	14.9	15.7	16.5
	25	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.0	9.5	10.1	8.1	9.4	9.8	10.4	11.0	9.6	11.1	11.6	12.3	13.0	11.4	13.2	13.8	14.6	15.4
	30	6.2	7.1	7.5	7.9	8.3	6.8	7.8	8.2	8.6	9.1	7.4	8.5	8.9	9.4	10.0	8.8	10.1	10.7	11.3	11.9	10.5	12.1	12.7	13.5	14.2
	35	5.5	6.3	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.2	6.6	7.6	8.0	8.5	9.0	8.0	9.2	9.7	10.2	10.8	9.6	11.0	11.6	12.3	13.0
	40	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.2	7.6	8.0	7.2	8.3	8.7	9.2	9.7	8.7	10.0	10.6	11.2	11.8
	45	4.2	4.8	5.1	5.3	5.6	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.											

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7⁰

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V₂

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
4000	-30	6.3	7.2	7.6	8.0	8.4	6.6	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.6	8.8	9.2	9.7	10.3	8.2	9.4	9.9	10.5	11.1
	-25	6.3	7.2	7.5	7.9	8.4	6.5	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.6	8.7	9.2	9.7	10.2	8.2	9.4	9.9	10.4	11.0
	-20	6.3	7.2	7.5	7.9	8.4	6.6	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.6	8.7	9.2	9.7	10.2	8.2	9.4	9.9	10.4	11.0
	-15	6.3	7.2	7.5	7.9	8.4	6.6	7.5	7.9	8.3	8.8	7.1	8.1	8.5	9.0	9.5	7.6	8.8	9.2	9.7	10.2	8.2	9.4	9.9	10.4	11.0
	-10	6.3	7.2	7.5	7.9	8.3	6.6	7.5	7.9	8.3	8.7	7.1	8.1	8.5	9.0	9.4	7.6	8.7	9.2	9.7	10.2	8.2	9.4	9.9	10.4	11.0
	-5	6.3	7.2	7.5	7.9	8.3	6.6	7.5	7.9	8.3	8.7	7.1	8.1	8.5	8.9	9.4	7.7	8.7	9.2	9.6	10.2	8.2	9.4	9.9	10.4	11.0
	0	6.1	6.9	7.3	7.6	8.0	6.4	7.2	7.6	8.0	8.4	6.9	7.8	8.2	8.6	9.1	7.4	8.5	8.9	9.3	9.8	8.0	9.1	9.6	10.1	10.6
	5	5.8	6.6	6.9	7.3	7.6	6.1	6.9	7.3	7.6	8.0	6.6	7.5	7.8	8.2	8.7	7.1	8.1	8.5	8.9	9.4	7.7	8.7	9.2	9.6	10.2
	10	5.3	6.1	6.4	6.7	7.0	5.6	6.4	6.7	7.0	7.4	6.1	6.9	7.3	7.6	8.0	6.6	7.5	7.9	8.3	8.7	7.1	8.2	8.6	9.0	9.5
	15	4.8	5.5	5.7	6.0	6.3	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.6	6.9	7.3	6.0	6.8	7.2	7.5	7.9	6.5	7.4	7.8	8.2	8.6
5000	-30	4.2	4.8	5.0	5.3	5.6	4.5	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.1	6.4	6.8	7.1	5.9	6.7	7.0	7.4	7.8
	-25	3.7	4.2	4.4	4.6	4.9	3.9	4.5	4.7	4.9	5.2	4.3	4.9	5.2	5.4	5.7	4.8	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	-20	3.1	3.6	3.7	3.9	4.2	3.3	3.8	4.0	4.2	4.5	3.7	4.3	4.5	4.7	5.0	4.2	4.8	5.0	5.3	5.5	4.6	5.3	5.6	5.8	6.2
	-15	2.6	3.0	3.1	3.3	3.5	2.8	3.2	3.4	3.6	3.8	3.2	3.7	3.8	4.0	4.3	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.8	5.1	5.4
	-10	2.0	2.4	2.5	2.6	2.8	2.3	2.6	2.8	2.9	3.1	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.6	3.8	4.1	3.4	3.9	4.1	4.4	4.6
	-5	1.5	1.8	1.9	2.0	2.1	1.7	2.0	2.1	2.2	2.4	2.1	2.4	2.5	2.7	2.8	2.4	2.8	3.0	3.1	3.3	2.8	3.3	3.4	3.6	3.8
	0	1.4	1.6	1.7	1.8	1.9	1.6	1.8	1.9	2.0	2.2	1.9	2.2	2.3	2.5	2.6	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.2	3.4	3.6
	5	6.4	7.4	7.8	8.2	8.6	6.7	7.7	8.1	8.6	9.0	7.3	8.3	8.8	9.2	9.7	7.8	9.0	9.4	9.9	10.5	8.4	9.7	10.2	10.7	11.3
	10	6.4	7.4	7.7	8.1	8.6	6.7	7.7	8.1	8.5	9.0	7.3	8.3	8.7	9.2	9.7	7.8	9.0	9.4	9.9	10.5	8.4	9.6	10.1	10.7	11.3
	15	6.4	7.3	7.7	8.1	8.5	6.7	7.7	8.1	8.5	8.9	7.2	8.3	8.7	9.1	9.6	7.8	8.9	9.4	9.9	10.4	8.4	9.6	10.1	10.6	11.2
6000	-30	6.4	7.3	7.7	8.1	8.5	6.7	7.6	8.0	8.4	8.9	7.2	8.2	8.7	9.1	9.6	7.8	8.9	9.3	9.8	10.3	8.4	9.6	10.1	10.6	11.2
	-25	6.3	7.2	7.6	7.9	8.4	6.6	7.5	7.9	8.3	8.7	7.1	8.1	8.5	9.0	9.5	7.7	8.8	9.2	9.7	10.2	8.3	9.5	9.9	10.4	11.0
	-20	6.2	7.0	7.4	7.7	8.1	6.4	7.3	7.7	8.1	8.5	7.0	7.9	8.3	8.7	9.2	7.5	8.6	9.0	9.4	9.9	8.1	9.2	9.7	10.2	10.7
	-15	6.0	6.8	7.1	7.5	7.9	6.2	7.1	7.5	7.8	8.2	6.7	7.7	8.1	8.5	8.9	7.3	8.3	8.7	9.2	9.6	7.9	9.0	9.4	9.9	10.4
	-10	5.7	6.4	6.7	7.1	7.4	5.9	6.8	7.1	7.4	7.8	6.4	7.3	7.7	8.0	8.5	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.0	9.4	9.9
	-5	5.3	6.1	6.4	6.7	7.0	5.6	6.4	6.7	7.0	7.4	6.1	6.9	7.3	7.6	8.0	6.6	7.5	7.9	8.3	8.7	7.1	8.1	8.5	9.0	9.4
	0	4.8	5.5	5.7	6.0	6.3	5.1	5.8	6.0	6.3	6.7	5.5	6.3	6.6	6.9	7.3	6.0	6.8	7.2	7.5	7.9	6.5	7.4	7.8	8.2	8.6
	5	4.3	4.9	5.1	5.4	5.6	4.5	5.2	5.4	5.7	6.0	5.0	5.7	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.4	7.8
	10	3.7	4.3	4.5	4.7	4.9	4.0	4.5	4.8	5.0	5.3	4.4	5.0	5.3	5.5	5.8	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.1
	15	3.2	3.7	3.8	4.0	4.3	3.4	3.9	4.1	4.3	4.6	3.8	4.4	4.6	4.8	5.1	4.3	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3
7000	-30	2.7	3.1	3.2	3.4	3.6	2.9	3.3	3.5	3.7	3.9	3.3	3.8	4.0	4.2	4.4	3.7	4.2	4.4	4.7	4.9	4.1	4.7	5.0	5.2	5.5
	-25	2.2	2.5	2.6	2.8	2.9	2.4	2.7	2.9	3.0	3.2	2.7	3.2	3.3	3.5	3.7	3.1	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.5	4.8
	-20	1.7	1.9	2.0	2.2	2.3	1.9	2.2	2.3	2.4	2.5	2.2	2.6	2.7	2.8	3.0	2.6	3.0	3.1	3.3	3.5	3.0	3.4	3.6	3.8	4.0
	-15	1.2	1.4	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.9	1.7	2.0	2.1	2.2	2.4	2.1	2.4	2.5	2.7	2.8	2.5	2.8	3.0	3.2	3.3
	-10	6.6	7.6	7.9	8.3	8.8	6.9	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.1	10.7	8.6	9.9	10.4	10.9	11.5
	-5	6.6	7.5	7.9	8.3	8.7	6.9	7.9	8.3	8.7	9.2	7.4	8.5	8.9	9.4	9.9	8.0	9.1	9.6	10.1	10.6	8.6	9.8	10.3	10.9	11.5
	0	6.6	7.5	7.8	8.2	8.7	6.9	7.8	8.2	8.6	9.1	7.4	8.4	8.8	9.3	9.8	7.9	9.1	9.5	10.0	10.5	8.5	9.8	10.3	10.8	11.4
	5	6.5	7.4	7.8	8.1	8.6	6.8	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.2	9.7	7.9	9.0	9.4	9.9	10.4	8.5	9.7	10.2	10.7	11.3
	10	6.2	7.1	7.4	7.8	8.2	6.5	7.4	7.8	8.2	8.6	7.0	8.0	8.4	8.8	9.3	7.6	8.6	9.1	9.5	10.0	8.2	9.3	9.8	10.3	10.8
	15	5.9	6.7	7.0	7.4	7.7	6.2	7.0	7.4	7.7	8.1	6.7	7.6	8.0	8.3	8.8	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.3
8000	-30	5.5	6.3	6.6	6.9	7.3	5.8	6.6	6.9	7.3	7.7	6.3	7.2	7.5	7.9	8.3	6.8	7.8	8.1	8.5	9.0	7.4	8.4	8.8	9.3	9.8
	-25	5.2	5.9	6.2	6.5	6.8	5.5	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	7.9	8.3	8.8	9.2
	-20	4.8	5.5	5.7	6.0	6.3	5.1	5.8	6.0	6.3	6.6	5.5	6.3	6.6	6.9	7.2	6.0	6.8	7.1	7.5	7.9	6.5	7.4	7.8	8.2	8.6
	-15	4.3	4.9	5.1	5.4	5.6	4.5	5.2	5.4	5.7	6.0	5.0	5.7	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.8
	-10	3.8	4.3	4.5	4.7	5.0	4.0	4.6	4.8	5.0	5.3	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.8	6.1	6.5	5.4	6.1	6.4	6.7	7.1
	-5	3.3	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.3	5.0	5.2	5.5	5.7	4.8	5.5	5.7	6.0	6.4
	0	2.8	3.2	3.3	3.5	3.7	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.0	4.3	4.5	3.8	4.3	4.5	4.8	5.0	4.2	4.8	5.1	5.3	5.6
	5	2.3	2.6	2.7	2.9	3.0	2.5	2.9	3.0	3.2	3.3	2.8	3.3	3.4	3.6	3.8	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.9
	10	1.8	2.1	2.2	2.3	2.4	2.0	2.3	2.4	2.5	2.7	2.3	2.7	2.8	3.0	3.1	2.7	3.1	3.3	3.4	3.6	3.1	3.6	3.8	3.9	4.2
	15	1.3	1.5	1.6	1.7	1.8	1.5	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.3	2.5	2.2	2.5	2.6	2.8	2.9	2.5	2.9	3.1	3.3	3.4
9000	-30	1.0	1.2	1.3	1.4	1.5	1.2	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.3	2.4	2.6	2.3	2.6	2.8	2.9	3.1
	-25	6.5	7.4	7.8	8.2	8.6	6.8	7.8	8.1	8.6	9.0	7.3	8.4	8.8	9.2	9.7	7.9	9.0	9.5	9.9	10.5	8.5	9.7	10.2	10.7	11.3

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
4000	-30	8.8	10.2	10.7	11.3	12.0	9.5	11.0	11.5	12.2	12.9	10.2	11.8	12.5	13.1	13.9	12.0	13.8	14.6	15.3	16.2	14.0	16.1	16.9	17.8	18.8
	-25	8.8	10.2	10.7	11.3	11.9	9.5	10.9	11.5	12.1	12.8	10.2	11.8	12.4	13.1	13.9	12.0	13.8	14.5	15.3	16.2	14.0	16.1	16.9	17.7	18.7
	-20	8.8	10.2	10.7	11.3	11.9	9.5	10.9	11.5	12.1	12.8	10.3	11.8	12.4	13.1	13.9	12.0	13.8	14.5	15.3	16.2	14.0	16.1	16.9	17.7	18.7
	-15	8.9	10.2	10.7	11.3	11.9	9.5	11.0	11.5	12.1	12.8	10.3	11.8	12.4	13.1	13.8	12.1	13.8	14.5	15.3	16.1	14.1	16.1	16.9	17.7	18.7
	-10	8.9	10.2	10.7	11.2	11.9	9.5	10.9	11.5	12.1	12.8	10.3	11.8	12.4	13.1	13.8	12.1	13.8	14.5	15.3	16.1	14.1	16.1	16.8	17.7	18.6
	-5	8.9	10.2	10.7	11.2	11.8	9.5	10.9	11.5	12.1	12.8	10.3	11.8	12.4	13.0	13.8	12.1	13.8	14.5	15.2	16.1	14.1	16.1	16.8	17.7	18.6
	0	8.6	9.8	10.3	10.9	11.5	9.3	10.6	11.1	11.7	12.4	10.0	11.4	12.0	12.7	13.4	11.7	13.4	14.1	14.8	15.6	13.7	15.7	16.4	17.2	18.2
	5	8.3	9.5	9.9	10.4	11.0	8.9	10.2	10.7	11.3	11.9	9.6	11.0	11.6	12.2	12.9	11.3	13.0	13.6	14.3	15.1	13.3	15.2	15.9	16.7	17.6
	10	7.7	8.8	9.3	9.8	10.3	8.4	9.6	10.1	10.6	11.2	9.1	10.4	10.9	11.5	12.1	10.6	12.2	12.8	13.5	14.2	12.6	14.4	15.1	15.9	16.7
	15	7.1	8.1	8.5	8.9	9.4	7.7	8.8	9.2	9.7	10.2	8.3	9.5	10.0	10.5	11.1	9.8	11.3	11.8	12.5	13.2	11.7	13.4	14.1	14.8	15.6
5000	-30	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3	7.6	8.7	9.2	9.6	10.1	9.0	10.4	10.9	11.5	12.1	10.8	12.4	13.0	13.7	14.5
	-25	5.7	6.6	6.9	7.3	7.7	6.3	7.2	7.6	8.0	8.4	6.9	7.9	8.3	8.7	9.2	8.3	9.5	10.0	10.5	11.1	9.9	11.4	12.0	12.6	13.3
	-20	5.1	5.9	6.1	6.5	6.8	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.5	7.9	8.3	7.5	8.6	9.0	9.5	10.1	9.0	10.4	10.9	11.5	12.2
	-15	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.7	7.0	7.4	6.7	7.8	8.2	8.6	9.1	8.2	9.5	10.0	10.5	11.1
	-10	3.9	4.5	4.7	4.9	5.2	4.3	5.0	5.3	5.5	5.8	4.9	5.6	5.9	6.2	6.5	6.0	6.9	7.3	7.7	8.1	7.4	8.5	9.0	9.5	10.0
	-5	3.3	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.7	5.0	4.2	4.8	5.1	5.4	5.7	5.3	6.1	6.4	6.8	7.2	6.6	7.6	8.0	8.5	9.0
	0	3.1	3.5	3.7	3.9	4.2	3.5	4.1	4.3	4.5	4.7	4.0	4.6	4.8	5.1	5.4	5.1	5.8	6.2	6.5	6.9	6.3	7.3	7.7	8.1	8.6
	5	9.1	10.4	11.0	11.6	12.2	9.7	11.2	11.8	12.4	13.2	10.5	12.1	12.7	13.4	14.2	12.3	14.1	14.8	15.6	16.5	14.3	16.4	17.2	18.1	19.1
	-30	9.0	10.4	10.9	11.5	12.2	9.7	11.2	11.8	12.4	13.1	10.5	12.1	12.7	13.4	14.1	12.3	14.1	14.8	15.6	16.5	14.3	16.3	17.1	18.0	19.0
	-25	9.0	10.4	10.9	11.5	12.1	9.7	11.1	11.7	12.3	13.0	10.5	12.0	12.6	13.3	14.1	12.3	14.0	14.7	15.5	16.4	14.3	16.3	17.1	18.0	18.9
6000	-20	9.0	10.3	10.8	11.4	12.0	9.7	11.1	11.7	12.3	13.0	10.4	12.0	12.6	13.3	14.0	12.2	14.0	14.7	15.5	16.3	14.3	16.2	17.0	17.9	18.8
	-15	8.9	10.2	10.7	11.3	11.9	9.6	11.0	11.5	12.1	12.8	10.3	11.8	12.4	13.1	13.8	12.1	13.9	14.5	15.3	16.1	14.1	16.1	16.9	17.7	18.7
	-10	8.7	10.0	10.5	11.0	11.6	9.4	10.7	11.3	11.9	12.5	10.1	11.6	12.2	12.8	13.5	11.9	13.6	14.2	15.0	15.8	13.9	15.8	16.6	17.4	18.3
	-5	8.5	9.7	10.2	10.7	11.3	9.1	10.5	11.0	11.5	12.2	9.8	11.3	11.8	12.5	13.1	11.6	13.2	13.9	14.6	15.4	13.6	15.5	16.2	17.0	17.9
	0	8.1	9.3	9.7	10.2	10.7	8.7	10.0	10.5	11.0	11.6	9.4	10.8	11.3	11.9	12.6	11.1	12.7	13.3	14.0	14.8	13.1	14.9	15.6	16.4	17.3
	5	7.7	8.8	9.3	9.7	10.2	8.4	9.6	10.0	10.5	11.1	9.0	10.3	10.9	11.4	12.0	10.6	12.2	12.8	13.4	14.2	12.6	14.4	15.1	15.8	16.7
	10	7.1	8.1	8.5	8.9	9.4	7.7	8.8	9.2	9.7	10.2	8.4	9.6	10.0	10.6	11.1	9.8	11.3	11.9	12.5	13.2	11.7	13.4	14.1	14.8	15.6
	15	6.4	7.4	7.7	8.1	8.6	7.0	8.0	8.4	8.9	9.4	7.7	8.8	9.2	9.7	10.2	9.1	10.4	11.0	11.5	12.2	10.8	12.4	13.1	13.8	14.5
	20	5.8	6.7	7.0	7.4	7.7	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3	8.4	9.6	10.1	10.6	11.2	10.0	11.5	12.1	12.7	13.4
	25	5.2	6.0	6.3	6.6	6.9	5.7	6.6	6.9	7.3	7.6	6.3	7.2	7.6	8.0	8.4	7.6	8.7	9.2	9.7	10.2	9.2	10.5	11.1	11.7	12.4
7000	-30	4.6	5.3	5.5	5.8	6.1	5.1	5.9	6.1	6.5	6.8	5.7	6.5	6.8	7.2	7.6	6.9	7.9	8.3	8.8	9.2	8.4	9.6	10.1	10.7	11.3
	-25	4.0	4.6	4.8	5.1	5.4	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.4	6.7	6.2	7.1	7.5	7.9	8.3	7.6	8.7	9.2	9.7	10.2
	-20	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.2	4.4	5.0	5.3	5.5	5.9	5.5	6.3	6.6	7.0	7.4	6.8	7.8	8.2	8.7	9.2
	-15	2.9	3.3	3.5	3.7	3.9	3.3	3.8	4.0	4.2	4.5	3.8	4.3	4.6	4.8	5.1	4.8	5.6	5.9	6.2	6.5	6.1	7.0	7.4	7.8	8.2
	-10	9.3	10.6	11.2	11.8	12.4	10.0	11.4	12.0	12.7	13.4	10.8	12.3	13.0	13.7	14.4	12.6	14.4	15.1	15.9	16.7	14.6	16.6	17.4	18.3	19.3
	-5	9.2	10.6	11.1	11.7	12.4	9.9	11.4	12.0	12.6	13.3	10.7	12.3	12.9	13.6	14.4	12.5	14.3	15.0	15.8	16.7	14.6	16.6	17.4	18.3	19.2
	0	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.5	13.2	10.7	12.2	12.8	13.5	14.2	12.5	14.2	14.9	15.7	16.5	14.5	16.5	17.3	18.1	19.1
	5	9.1	10.4	10.9	11.5	12.1	9.8	11.2	11.8	12.4	13.1	10.6	12.1	12.7	13.4	14.1	12.4	14.1	14.8	15.6	16.4	14.4	16.4	17.2	18.0	18.9
	10	8.8	10.0	10.5	11.1	11.7	9.5	10.8	11.4	11.9	12.6	10.2	11.7	12.2	12.9	13.6	12.0	13.7	14.3	15.1	15.9	14.0	15.9	16.7	17.5	18.4
	15	8.4	9.6	10.0	10.6	11.1	9.1	10.3	10.9	11.4	12.0	9.8	11.2	11.7	12.3	13.0	11.5	13.1	13.8	14.5	15.2	13.5	15.3	16.1	16.9	17.8
8000	-30	8.0	9.1	9.5	10.0	10.6	8.6	9.9	10.3	10.9	11.4	9.3	10.7	11.2	11.8	12.4	11.0	12.5	13.1	13.8	14.6	12.9	14.7	15.4	16.2	17.1
	-25	7.6	8.6	9.0	9.5	10.0	8.2	9.4	9.8	10.3	10.9	8.9	10.1	10.6	11.2	11.8	10.4	11.9	12.5	13.2	13.9	12.4	14.1	14.8	15.6	16.4
	-20	7.1	8.1	8.5	8.9	9.4	7.7	8.8	9.2	9.7	10.2	8.3	9.5	10.0	10.5	11.1	9.8	11.2	11.8	12.4	13.1	11.7	13.4	14.0	14.8	15.6
	-15	6.5	7.4	7.7	8.1	8.6	7.1	8.1	8.5	8.9	9.4	7.7	8.8	9.2	9.7	10.2	9.1	10.4	11.0	11.5	12.2	10.9	12.4	13.1	13.8	14.5
	-10	5.9	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.9	9.4	8.4	9.6	10.1	10.7	11.2	10.0	11.5	12.1	12.8	13.5
	-5	5.3	6.0	6.3	6.7	7.0	5.8	6.7	7.0	7.3	7.7	6.4	7.3	7.7	8.1	8.5	7.7	8.8	9.3	9.8	10.3	9.3	10.6	11.2	11.8	12.5
	0	4.7	5.4	5.6	5.9	6.2	5.2	6.0	6.3	6.6	6.9	5.8	6.6	6.9	7.3	7.7										

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7⁰

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		16300					16000					15500					15000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8000	-35	6.3	7.2	7.5	7.9	8.3	6.6	7.5	7.8	8.2	8.7	7.1	8.1	8.5	8.9	9.4	7.6	8.7	9.1	9.6	10.1
	-30	6.0	6.8	7.1	7.5	7.9	6.3	7.1	7.5	7.9	8.3	6.8	7.7	8.1	8.5	8.9	7.3	8.3	8.7	9.2	9.7
	-25	5.7	6.5	6.8	7.1	7.5	6.0	6.8	7.1	7.5	7.9	6.5	7.4	7.7	8.1	8.5	7.0	8.0	8.3	8.8	9.2
	-20	5.4	6.1	6.4	6.7	7.1	5.7	6.5	6.8	7.1	7.5	6.1	7.0	7.3	7.7	8.1	6.7	7.6	7.9	8.3	8.8
	-15	5.1	5.8	6.1	6.4	6.7	5.4	6.1	6.4	6.7	7.1	5.8	6.6	7.0	7.3	7.7	6.3	7.2	7.6	7.9	8.3
	-10	4.8	5.5	5.7	6.0	6.3	5.1	5.8	6.0	6.3	6.6	5.5	6.3	6.6	6.9	7.2	6.0	6.8	7.2	7.5	7.9
	-5	4.5	5.1	5.3	5.6	5.9	4.8	5.4	5.7	5.9	6.2	5.2	5.9	6.2	6.5	6.8	5.7	6.4	6.8	7.1	7.4
	0	4.2	4.7	5.0	5.2	5.5	4.4	5.0	5.3	5.5	5.8	4.8	5.5	5.8	6.0	6.4	5.3	6.0	6.3	6.6	7.0
	5	3.8	4.3	4.5	4.7	4.9	4.0	4.5	4.8	5.0	5.2	4.4	5.0	5.3	5.5	5.8	4.9	5.5	5.8	6.1	6.4
	10	3.3	3.8	4.0	4.2	4.4	3.6	4.1	4.3	4.5	4.7	4.0	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.5	5.8
10000	-35	2.9	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.4	4.7	4.9	5.1
	-30	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.1	3.3	3.5	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.5
	-25	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.8	2.5	2.8	3.0	3.1	3.3	2.9	3.3	3.4	3.6	3.8
	-20	1.4	1.7	1.8	1.9	2.0	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.5	2.7	2.3	2.7	2.8	3.0	3.1
	-15	1.0	1.1	1.2	1.3	1.4	1.1	1.4	1.4	1.5	1.6	1.5	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.4	2.5
	-10	0.8	0.9	1.0	1.1	1.2	0.8	1.0	1.0	1.1	1.2	1.1	1.3	1.4	1.5	1.6	1.5	1.7	1.8	1.9	2.0
	-5	0.6	0.7	0.8	0.9	1.0	0.6	0.8	0.8	0.9	1.0	0.9	1.1	1.2	1.3	1.4	1.3	1.5	1.6	1.7	1.8
	0	0.4	0.5	0.6	0.7	0.8	0.4	0.6	0.6	0.7	0.8	0.7	0.9	1.0	1.1	1.2	1.1	1.3	1.4	1.5	1.6
	5	0.3	0.4	0.5	0.6	0.7	0.3	0.5	0.5	0.6	0.7	0.6	0.8	0.9	1.0	1.1	1.0	1.2	1.3	1.4	1.5
	10	0.2	0.3	0.4	0.5	0.6	0.2	0.4	0.4	0.5	0.6	0.5	0.7	0.8	0.9	1.0	0.9	1.1	1.2	1.3	1.4
12000	-35	5.7	6.5	6.8	7.1	7.5	6.0	6.8	7.1	7.5	7.9	6.5	7.4	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.2
	-30	5.4	6.2	6.5	6.8	7.1	5.7	6.5	6.8	7.1	7.5	6.2	7.0	7.4	7.7	8.1	6.7	7.6	8.0	8.4	8.8
	-25	5.2	5.9	6.1	6.4	6.7	5.4	6.2	6.4	6.8	7.1	5.9	6.7	7.0	7.3	7.7	6.4	7.3	7.6	8.0	8.4
	-20	4.9	5.5	5.8	6.1	6.4	5.1	5.8	6.1	6.4	6.7	5.6	6.4	6.7	7.0	7.3	6.1	6.9	7.2	7.6	8.0
	-15	4.6	5.2	5.5	5.7	6.0	4.8	5.5	5.8	6.0	6.3	5.3	6.0	6.3	6.6	6.9	5.8	6.6	6.9	7.2	7.6
	-10	4.3	4.9	5.1	5.4	5.6	4.5	5.2	5.4	5.7	5.9	5.0	5.7	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.1
	-5	4.0	4.5	4.7	5.0	5.2	4.2	4.8	5.0	5.3	5.5	4.7	5.3	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.7
	0	3.7	4.2	4.3	4.6	4.8	3.9	4.4	4.6	4.9	5.1	4.3	4.9	5.1	5.4	5.6	4.8	5.4	5.7	5.9	6.2
	5	3.3	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.1	4.4	4.9	5.2	5.4	5.7
	10	2.9	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.1
14000	-35	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.3	3.5	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.5
	-30	2.0	2.3	2.4	2.5	2.7	2.2	2.5	2.6	2.8	2.9	2.5	2.9	3.0	3.2	3.4	2.9	3.3	3.5	3.7	3.9
	-25	1.5	1.7	1.8	1.9	2.0	1.7	2.0	2.1	2.2	2.3	2.0	2.3	2.5	2.6	2.7	2.4	2.8	2.9	3.1	3.2
	-20	1.0	1.2	1.3	1.4	1.5	1.2	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.1	1.9	2.2	2.3	2.4	2.6
	-15	0.8	0.9	1.0	1.1	1.2	0.8	1.0	1.0	1.1	1.2	1.1	1.3	1.4	1.5	1.6	1.4	1.7	1.7	1.9	2.0
	-10	0.6	0.7	0.8	0.9	1.0	0.6	0.8	0.8	0.9	1.0	0.9	1.1	1.2	1.3	1.4	1.3	1.5	1.6	1.7	1.8
	-5	0.4	0.5	0.6	0.7	0.8	0.4	0.6	0.6	0.7	0.8	0.7	0.9	1.0	1.1	1.2	1.1	1.3	1.4	1.5	1.6
	0	0.3	0.4	0.5	0.6	0.7	0.3	0.5	0.5	0.6	0.7	0.6	0.8	0.9	1.0	1.1	1.0	1.2	1.3	1.4	1.5
	5	0.2	0.3	0.4	0.5	0.6	0.2	0.4	0.4	0.5	0.6	0.5	0.7	0.8	0.9	1.0	0.9	1.1	1.2	1.3	1.4
	10	0.1	0.2	0.3	0.4	0.5	0.1	0.3	0.3	0.4	0.5	0.4	0.6	0.7	0.8	0.9	0.8	1.0	1.1	1.2	1.3
16000	-35	4.6	5.3	5.5	5.8	6.0	4.9	5.5	5.8	6.1	6.4	5.3	6.1	6.3	6.6	7.0	5.8	6.6	6.9	7.2	7.6
	-30	4.4	5.0	5.2	5.4	5.7	4.6	5.2	5.5	5.7	6.0	5.1	5.7	6.0	6.3	6.6	5.5	6.3	6.6	6.9	7.2
	-25	4.1	4.7	4.9	5.1	5.4	4.4	4.9	5.2	5.4	5.7	4.8	5.4	5.7	6.0	6.3	5.2	6.0	6.2	6.5	6.9
	-20	3.8	4.4	4.6	4.8	5.0	4.1	4.6	4.9	5.1	5.3	4.5	5.1	5.4	5.6	5.9	5.0	5.6	5.9	6.2	6.5
	-15	3.6	4.1	4.3	4.5	4.7	3.8	4.3	4.5	4.7	5.0	4.2	4.8	5.0	5.3	5.5	4.7	5.3	5.5	5.8	6.1
	-10	3.3	3.8	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.1	4.4	5.0	5.2	5.4	5.7
	-5	3.0	3.4	3.6	3.8	4.0	3.2	3.7	3.9	4.0	4.2	3.6	4.1	4.3	4.5	4.8	4.1	4.6	4.8	5.1	5.3
	0	2.7	3.1	3.2	3.4	3.6	2.9	3.3	3.5	3.7	3.9	3.3	3.8	4.0	4.1	4.4	3.7	4.2	4.4	4.7	4.9
	5	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.1	3.3	3.4	3.0	3.4	3.6	3.7	3.9	3.4	3.9	4.0	4.2	4.5
	10	2.0	2.3	2.4	2.5	2.6	2.2	2.5	2.6	2.8	2.9	2.6	2.9	3.1	3.2	3.4	2.9	3.4	3.5	3.7	3.9
18000	-35	1.6	1.8	1.9	2.0	2.1	1.8	2.0	2.1	2.3	2.4	2.1	2.4	2.6	2.7	2.8	2.5	2.9	3.0	3.1	3.3
	-30	1.1	1.3	1.4	1.5	1.6	1.3	1.5	1.6	1.7	1.8	1.7	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.6	2.7
	-25	0.7	0.8	0.9	1.0	1.0	0.9	1.1	1.1	1.2	1.3	1.2	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.1
	-20	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.3	1.4	1.5	1.5
	-15	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.4	0.4	0.5	0.5	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3
	-10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	-5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	10	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-31 (Sheet 5 of 8)

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																									
		14000					13500					13000					12000					11000					
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
8000	-35	8.9	10.1	10.6	11.2	11.8	9.6	10.9	11.5	12.1	12.7	10.3	11.8	12.4	13.0	13.7	12.1	13.8	14.5	15.2	16.0	14.1	16.0	16.8	17.6	18.5	
	-30	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.5	13.2	11.7	13.3	13.9	14.7	15.4	13.6	15.5	16.3	17.1	18.0	
	-25	8.2	9.3	9.8	10.3	10.8	8.8	10.1	10.6	11.1	11.7	9.5	10.9	11.4	12.0	12.7	11.2	12.8	13.4	14.1	14.9	13.2	15.0	15.7	16.5	17.4	
	-20	7.8	8.9	9.3	9.8	10.3	8.5	9.6	10.1	10.6	11.2	9.1	10.4	11.0	11.5	12.1	10.7	12.3	12.9	13.6	14.3	12.7	14.5	15.2	15.9	16.8	
	-15	7.5	8.5	8.9	9.4	9.8	8.1	9.2	9.7	10.2	10.7	8.8	10.0	10.5	11.0	11.6	10.3	11.8	12.3	13.0	13.7	12.2	13.9	14.6	15.4	16.2	
	-10	7.1	8.1	8.5	8.9	9.4	7.7	8.8	9.2	9.7	10.2	8.4	9.5	10.0	10.5	11.1	9.8	11.3	11.8	12.4	13.1	11.7	13.4	14.1	14.8	15.6	
	-5	6.7	7.6	8.0	8.4	8.9	7.3	8.3	8.7	9.2	9.7	8.0	9.1	9.5	10.0	10.5	9.4	10.8	11.3	11.9	12.5	11.2	12.8	13.4	14.1	14.9	
	0	6.3	7.2	7.5	7.9	8.3	6.9	7.9	8.2	8.7	9.1	7.5	8.6	9.0	9.5	10.0	8.9	10.2	10.7	11.3	11.9	10.7	12.2	12.8	13.5	14.2	
	5	5.8	6.7	7.0	7.3	7.7	6.4	7.3	7.6	8.0	8.4	7.0	8.0	8.4	8.8	9.3	8.4	9.6	10.0	10.5	11.1	10.0	11.4	12.0	12.6	13.3	
	10	5.4	6.1	6.4	6.7	7.1	5.9	6.7	7.0	7.4	7.8	6.5	7.4	7.7	8.1	8.6	7.8	8.9	9.3	9.8	10.3	9.3	10.7	11.2	11.8	12.5	
	15	4.8	5.5	5.8	6.0	6.4	5.3	6.1	6.4	6.7	7.0	5.9	6.7	7.0	7.4	7.8	7.1	8.2	8.6	9.0	9.5	8.6	9.9	10.4	10.9	11.5	
	20	4.3	4.9	5.1	5.4	5.6	4.8	5.4	5.7	6.0	6.3	5.3	6.0	6.3	6.7	7.0	6.5	7.4	7.8	8.2	8.6	7.9	9.1	9.5	10.0	10.6	
7000	-35	3.7	4.2	4.5	4.7	4.9	4.2	4.8	5.0	5.3	5.5	4.7	5.4	5.6	5.9	6.2	5.8	6.7	7.0	7.4	7.8	7.2	8.2	8.7	9.1	9.6	
	-30	3.2	3.6	3.8	4.0	4.2	3.6	4.1	4.3	4.6	4.8	4.1	4.7	4.9	5.2	5.4	5.2	5.9	6.2	6.6	6.9	6.5	7.4	7.8	8.2	8.7	
	-25	2.6	3.0	3.2	3.3	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.7	4.5	5.2	5.5	5.8	6.1	5.8	6.6	7.0	7.3	7.7	
	-20	2.2	2.6	2.7	2.8	3.0	2.6	3.0	3.2	3.4	3.5	3.1	3.5	3.7	3.9	4.1	4.1	4.7	4.9	5.2	5.5	5.3	6.1	6.4	6.7	7.1	
	-15	8.2	9.3	9.8	10.3	10.8	8.8	10.1	10.6	11.1	11.7	9.6	10.9	11.5	12.1	12.7	11.2	12.8	13.5	14.2	14.9	13.2	15.0	15.8	16.5	17.4	
	-10	7.8	9.0	9.4	9.9	10.4	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	10.8	12.3	13.0	13.6	14.4	12.8	14.5	15.2	16.0	16.8	
	-5	7.5	8.6	9.0	9.4	9.9	8.1	9.3	9.7	10.2	10.8	8.8	10.1	10.6	11.1	11.7	10.4	11.8	12.4	13.1	13.8	12.3	14.0	14.7	15.4	16.3	
	0	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.3	8.4	9.6	10.1	10.6	11.2	9.9	11.4	11.9	12.6	13.2	11.8	13.5	14.2	14.9	15.7	
	-15	6.8	7.8	8.1	8.6	9.0	7.4	8.5	8.9	9.3	9.8	8.1	9.2	9.7	10.2	10.7	9.5	10.9	11.4	12.0	12.7	11.4	13.0	13.6	14.3	15.1	
	-10	6.5	7.4	7.7	8.1	8.5	7.1	8.0	8.4	8.9	9.3	7.7	8.8	9.2	9.7	10.2	9.1	10.4	10.9	11.5	12.1	10.9	12.4	13.0	13.7	14.5	
	-5	6.1	7.0	7.3	7.7	8.1	6.7	7.6	8.0	8.4	8.8	7.3	8.3	8.7	9.2	9.6	8.7	9.9	10.4	11.0	11.5	10.4	11.9	12.4	13.1	13.8	
	0	5.7	6.5	6.8	7.2	7.5	6.3	7.1	7.5	7.9	8.3	6.9	7.8	8.2	8.6	9.1	8.2	9.4	9.9	10.4	10.9	9.8	11.2	11.8	12.4	13.1	
5	5.3	6.0	6.3	6.6	7.0	5.8	6.6	7.0	7.3	7.7	6.4	7.3	7.6	8.0	8.4	7.7	8.8	9.2	9.7	10.2	9.3	10.6	11.1	11.7	12.3		
6000	-35	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.0	5.9	6.7	7.0	7.4	7.8	7.1	8.2	8.6	9.0	9.5	8.7	9.9	10.4	10.9	11.5	
	-30	4.3	4.9	5.1	5.4	5.7	4.8	5.5	5.7	6.0	6.3	5.3	6.1	6.4	6.7	7.0	6.5	7.4	7.8	8.2	8.6	8.0	9.1	9.6	10.1	10.6	
	-25	3.8	4.3	4.5	4.7	5.0	4.2	4.8	5.1	5.3	5.6	4.8	5.4	5.7	6.0	6.3	5.9	6.7	7.1	7.4	7.8	7.3	8.3	8.7	9.2	9.7	
	-20	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.9	4.2	4.8	5.0	5.2	5.5	5.3	6.0	6.3	6.6	7.0	6.6	7.5	7.9	8.3	8.8	
	-15	2.7	3.1	3.2	3.4	3.6	3.1	3.6	3.7	3.9	4.2	3.6	4.1	4.3	4.5	4.8	4.6	5.3	5.6	5.9	6.2	5.9	6.7	7.1	7.4	7.8	
	-10	2.2	2.5	2.6	2.8	2.9	2.6	3.0	3.1	3.3	3.5	3.0	3.5	3.7	3.8	4.0	4.0	4.6	4.9	5.1	5.4	5.2	6.0	6.3	6.6	7.0	
	-5	2.0	2.3	2.4	2.6	2.7	2.4	2.8	2.9	3.1	3.2	2.8	3.3	3.4	3.6	3.8	3.8	4.4	4.6	4.9	5.1	5.0	5.7	6.0	6.3	6.7	
	0	7.5	8.6	9.0	9.4	9.9	8.1	9.3	9.7	10.2	10.8	8.8	10.1	10.6	11.1	11.7	10.4	11.9	12.4	13.1	13.8	12.3	14.0	14.7	15.5	16.3	
	-30	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.3	8.5	9.7	10.1	10.7	11.2	10.0	11.4	12.0	12.6	13.3	11.9	13.5	14.2	14.9	15.7	
	-25	6.9	7.8	8.2	8.6	9.0	7.5	8.5	8.9	9.4	9.9	8.1	9.3	9.7	10.2	10.7	9.6	11.0	11.5	12.1	12.7	11.4	13.0	13.7	14.4	15.2	
	-20	6.5	7.4	7.8	8.2	8.6	7.1	8.1	8.5	8.9	9.4	7.8	8.9	9.3	9.8	10.3	9.2	10.5	11.0	11.6	12.2	11.0	12.5	13.2	13.8	14.6	
	-15	6.2	7.1	7.4	7.8	8.2	6.8	7.7	8.1	8.5	8.9	7.4	8.5	8.9	9.3	9.8	8.8	10.1	10.6	11.1	11.7	10.5	12.0	12.6	13.3	14.0	
-10	5.9	6.7	7.0	7.4	7.7	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3	8.4	9.6	10.1	10.6	11.1	10.0	11.5	12.0	12.7	13.4		
5000	-5	5.5	6.3	6.6	6.9	7.3	6.1	6.9	7.3	7.6	8.0	6.7	7.6	8.0	8.4	8.8	8.0	9.1	9.6	10.1	10.6	9.6	11.0	11.5	12.1	12.8	
	0	5.2	5.9	6.2	6.5	6.8	5.7	6.5	6.8	7.1	7.5	6.3	7.1	7.5	7.8	8.2	7.6	8.6	9.0	9.5	10.0	9.1	10.4	10.9	11.5	12.1	
	5	4.8	5.5	5.7	6.0	6.3	5.3	6.0	6.3	6.6	7.0	5.9	6.7	7.0	7.3	7.7	7.1	8.1	8.5	8.9	9.4	8.6	9.8	10.3	10.9	11.4	
	10	4.3	4.9	5.2	5.4	5.7	4.8	5.5	5.7	6.0	6.3	5.3	6.1	6.4	6.7	7.0	6.5	7.5	7.8	8.2	8.6	8.0	9.1	9.6	10.1	10.6	
	15	3.8	4.3	4.5	4.8	5.0	4.3	4.9	5.1	5.4	5.6	4.8	5.5	5.7	6.0	6.3	5.9	6.8	7.1	7.5	7.9	7.3	8.4	8.8	9.2	9.7	
	20	3.3	3.7	3.9	4.1	4.3	3.7	4.3	4.5	4.7	4.9	4.2	4.8	5.1	5.3	5.6	5.3	6.1	6.4	6.7	7.1	6.6	7.6	8.0	8.4	8.8	
	-25	2.7	3.2	3.3	3.5	3.7	3.2	3.6	3.8	4.0	4.2	3.7	4.2	4.4	4.6	4.8	4.7	5.4	5.7	5.9	6.3	6.0	6.8	7.2	7.5	7.9	
	-30	2.2	2.6	2.7	2.8	3.0	2.6	3.0	3.2	3.4	3.5	3.1	3.6	3.7	3.9	4.1	4.1	4.7	4.9	5.2	5.5	5.3	6.1	6.4	6.7	7.1	
	-35	1.8	2.1	2.2	2.3	2.4	2.2	2.5	2.6	2.8	2.9	2.6	3.0	3.2	3.3	3.5	3.6	4.1	4.3	4.5	4.8	4.7	5.4	5.7	6.0	6.3	
	4000	-35	6.9	7.8	8.2	8.6	9.0	7.5	8.5	8.9	9.4	9.9	8.1	9.3	9.7	10.2	10.8	9.6	11.0	11.5	12.1	12.8	11.4	13.1	13.7	14.4	15.2
		-30	6.6	7.5	7.8	8.2	8.6	7.1	8.1	8.5	9.0	9.4	7.8	8.9	9.3	9.8	10.3	9.2	10.5	11.1	11.6	12.3	11.0	12.6	13.2	13.9	14.6
		-25	6.3	7.1	7.5	7.8	8.2	6.8	7.8	8.1	8.5	9.0	7.5	8.5	8.9	9.4	9.8	8.9	10.1	10.6	11.2	11.8	10.6	12.1	12.7	13.3	14.1
-20		5.9	6.8	7.1	7.4	7.8	6.5	7.4	7.8	8.1	8.6	7.1	8.1	8.5	8.9	9.4	8.5	9.7	10.2	10.7	11.3	10.1	11.6	12.2	12.8	13	

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7⁰

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEC C	WEIGHT - POUNDS																			
		16300					16000					15500					15000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	4.1	4.7	4.9	5.1	5.4	4.3	4.9	5.2	5.4	5.7	4.8	5.4	5.7	6.0	6.2	5.2	5.9	6.2	6.5	6.9
2	-30	3.9	4.4	4.6	4.8	5.0	4.1	4.6	4.9	5.1	5.3	4.5	5.1	5.4	5.6	5.9	5.0	5.6	5.9	6.2	6.5
0	-25	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.0	4.2	4.8	5.0	5.3	5.6	4.7	5.3	5.6	5.8	6.1
0	-20	3.3	3.8	4.0	4.2	4.4	3.6	4.1	4.3	4.5	4.7	4.0	4.5	4.7	5.0	5.2	4.4	5.0	5.2	5.5	5.8
0	-15	3.1	3.5	3.7	3.8	4.0	3.3	3.8	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.8	4.1	4.7	4.9	5.1	5.4
0	-10	2.8	3.2	3.4	3.5	3.7	3.0	3.5	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.5	3.8	4.4	4.6	4.8	5.0
0	-5	2.6	2.9	3.1	3.2	3.4	2.8	3.2	3.3	3.5	3.6	3.2	3.6	3.8	3.9	4.1	3.6	4.0	4.2	4.4	4.7
0	0	2.3	2.6	2.7	2.9	3.0	2.5	2.8	3.0	3.1	3.3	2.9	3.3	3.4	3.6	3.8	3.3	3.7	3.9	4.1	4.3
0	5	1.9	2.2	2.3	2.5	2.6	2.2	2.5	2.6	2.7	2.9	2.5	2.9	3.0	3.2	3.3	2.9	3.3	3.5	3.6	3.8
0	10	1.6	1.8	1.9	2.0	2.1	1.8	2.0	2.1	2.2	2.4	2.1	2.4	2.5	2.7	2.8	2.5	2.8	3.0	3.1	3.3
0	15	1.2	1.4	1.4	1.5	1.6	1.3	1.6	1.7	1.8	1.8	1.7	2.0	2.1	2.2	2.3	2.0	2.4	2.5	2.6	2.7
0	20	.7	.9	1.0	1.0	1.1	.9	1.1	1.2	1.2	1.3	1.2	1.5	1.5	1.6	1.7	1.6	1.9	1.9	2.1	2.2
0	25	.3	.4	.5	.5	.6	.5	.6	.7	.7	.8	.8	1.0	1.0	1.1	1.2	1.1	1.3	1.4	1.5	1.6
0	30	-.1	.0	.0	.1	.1	.1	.2	.2	.3	.3	.4	.5	.6	.6	.7	.7	.9	.9	1.0	1.1
1	-35	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.0	4.2	4.8	5.0	5.3	5.6	4.7	5.3	5.6	5.8	6.1
3	-30	3.4	3.8	4.0	4.2	4.4	3.6	4.1	4.3	4.5	4.7	4.0	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.5	5.8
0	-25	3.1	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.7	4.2	4.4	4.7	4.9	4.2	4.7	4.9	5.2	5.4
0	-20	2.9	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.0	3.5	4.0	4.1	4.3	4.6	3.9	4.4	4.6	4.9	5.1
0	-15	2.6	3.0	3.1	3.3	3.4	2.8	3.2	3.4	3.5	3.7	3.2	3.7	3.8	4.0	4.2	3.6	4.1	4.3	4.5	4.7
0	-10	2.4	2.7	2.8	3.0	3.1	2.6	2.9	3.1	3.2	3.4	3.0	3.4	3.5	3.7	3.9	3.4	3.8	4.0	4.2	4.4
0	-5	2.1	2.4	2.5	2.7	2.8	2.3	2.7	2.8	2.9	3.1	2.7	3.1	3.2	3.4	3.5	3.1	3.5	3.7	3.8	4.0
0	0	1.8	2.1	2.2	2.3	2.5	2.1	2.4	2.5	2.6	2.7	2.4	2.8	2.9	3.0	3.2	2.8	3.2	3.3	3.5	3.7
0	5	1.5	1.7	1.8	1.9	2.0	1.7	2.0	2.1	2.2	2.3	2.0	2.3	2.5	2.6	2.7	2.4	2.8	2.9	3.0	3.2
0	10	1.1	1.3	1.4	1.5	1.6	1.3	1.6	1.6	1.7	1.8	1.7	1.9	2.0	2.1	2.3	2.0	2.3	2.5	2.6	2.7
0	15	.8	.9	1.0	1.0	1.1	.9	1.1	1.2	1.3	1.3	1.3	1.5	1.6	1.7	1.7	1.6	1.9	2.0	2.1	2.2
0	20	.4	.5	.5	.6	.6	.5	.7	.7	.8	.8	.8	1.0	1.1	1.2	1.2	1.2	1.4	1.5	1.6	1.6
0	25	.0	.0	.1	.1	.1	.1	.2	.3	.3	.3	.4	.6	.6	.7	.7	.8	.9	1.0	1.0	1.1
0	28	-.3	-.3	-.3	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.2	.3	.3	.3	.4	.6	.6	.7	.7
1	-35	3.1	3.5	3.7	3.9	4.1	3.3	3.8	4.0	4.2	4.4	3.7	4.2	4.4	4.6	4.9	4.2	4.7	4.9	5.2	5.4
4	-30	2.9	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.0	3.5	4.0	4.1	4.3	4.6	3.9	4.4	4.6	4.9	5.1
0	-25	2.6	3.0	3.1	3.3	3.5	2.9	3.3	3.4	3.6	3.7	3.2	3.7	3.9	4.0	4.2	3.6	4.1	4.3	4.5	4.8
0	-20	2.4	2.7	2.9	3.0	3.2	2.6	3.0	3.1	3.3	3.4	3.0	3.4	3.6	3.7	3.9	3.4	3.9	4.0	4.2	4.4
0	-15	2.2	2.5	2.6	2.7	2.9	2.4	2.7	2.8	3.0	3.1	2.7	3.1	3.3	3.4	3.6	3.1	3.6	3.7	3.9	4.1
0	-10	1.9	2.2	2.3	2.4	2.6	2.1	2.4	2.6	2.7	2.8	2.5	2.8	3.0	3.1	3.3	2.9	3.3	3.4	3.6	3.8
0	-5	1.7	1.9	2.0	2.1	2.2	1.9	2.2	2.3	2.4	2.5	2.2	2.5	2.7	2.8	2.9	2.6	3.0	3.1	3.3	3.4
0	0	1.4	1.6	1.7	1.8	1.9	1.6	1.8	1.9	2.0	2.1	1.9	2.2	2.3	2.5	2.6	2.3	2.6	2.8	2.9	3.1
0	5	1.1	1.3	1.3	1.4	1.5	1.3	1.5	1.6	1.7	1.7	1.6	1.9	2.0	2.1	2.2	2.0	2.3	2.4	2.5	2.6
0	10	.8	.9	1.0	1.0	1.1	.9	1.1	1.2	1.3	1.3	1.3	1.5	1.6	1.6	1.7	1.6	1.9	2.0	2.1	2.2
0	15	.4	.5	.5	.6	.6	.6	.7	.7	.8	.9	.9	1.0	1.1	1.2	1.2	1.2	1.4	1.5	1.6	1.7
0	20	.0	.1	.1	.1	.2	.2	.3	.3	.3	.4	.5	.6	.6	.7	.7	.8	.9	1.0	1.1	1.1
0	25	-.4	-.3	-.3	-.3	-.3	-.2	-.2	-.1	-.1	-.1	.1	.1	.2	.2	.3	.4	.5	.5	.6	.6
0	26	-.5	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.1	.0	.0	.1	.1	.2	.3	.4	.4	.5

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-31 (Sheet 7 of 8)

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 7°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		14000					13500					13000					12000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	6.2	7.1	7.4	7.8	8.2	6.8	7.8	8.1	8.5	9.0	7.4	8.5	8.9	9.3	9.8	8.9	10.1	10.6	11.2	11.8
2	-30	6.0	6.8	7.1	7.4	7.8	6.5	7.4	7.8	8.2	8.6	7.1	8.1	8.5	8.9	9.4	8.5	9.7	10.2	10.7	11.3
0	-25	5.7	6.4	6.7	7.1	7.4	6.2	7.1	7.4	7.8	8.2	6.8	7.7	8.1	8.5	9.0	8.2	9.3	9.8	10.2	10.8
0	-20	5.4	6.1	6.4	6.7	7.0	5.9	6.7	7.0	7.4	7.7	6.5	7.4	7.7	8.1	8.5	7.8	8.9	9.3	9.8	10.3
0	-15	5.1	5.8	6.0	6.3	6.6	5.6	6.4	6.7	7.0	7.3	6.1	7.0	7.3	7.7	8.1	7.4	8.5	8.9	9.3	9.8
	-10	4.8	5.4	5.7	5.9	6.2	5.3	6.0	6.3	6.6	6.9	5.8	6.6	6.9	7.3	7.6	7.1	8.1	8.4	8.9	9.3
	-5	4.5	5.1	5.3	5.6	5.8	5.0	5.6	5.9	6.2	6.5	5.5	6.2	6.5	6.9	7.2	6.7	7.6	8.0	8.4	8.8
	0	4.1	4.7	4.9	5.2	5.4	4.6	5.3	5.5	5.8	6.1	5.2	5.9	6.1	6.4	6.8	6.3	7.2	7.5	7.9	8.3
	5	3.8	4.3	4.5	4.7	4.9	4.2	4.8	5.0	5.3	5.5	4.7	5.4	5.6	5.9	6.2	5.9	6.7	7.0	7.4	7.7
	10	3.3	3.8	3.9	4.1	4.3	3.8	4.3	4.5	4.7	4.9	4.3	4.8	5.1	5.3	5.6	5.4	6.1	6.4	6.7	7.1
	15	2.8	3.3	3.4	3.6	3.8	3.3	3.7	3.9	4.1	4.3	3.8	4.3	4.5	4.7	4.9	4.8	5.5	5.8	6.0	6.4
	20	2.4	2.7	2.8	3.0	3.1	2.8	3.2	3.3	3.5	3.7	3.2	3.7	3.9	4.1	4.3	4.3	4.9	5.1	5.3	5.6
	25	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.8	2.9	3.1	2.7	3.1	3.3	3.4	3.6	3.7	4.2	4.4	4.7	4.9
	30	1.4	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.3	2.5	2.2	2.6	2.7	2.8	3.0	3.2	3.6	3.8	4.0	4.2
1	-35	5.7	6.4	6.7	7.1	7.4	6.2	7.1	7.4	7.8	8.2	6.8	7.7	8.1	8.5	8.9	8.2	9.3	9.8	10.2	10.8
3	-30	5.4	6.1	6.4	6.7	7.1	5.9	6.7	7.0	7.4	7.8	6.5	7.4	7.7	8.1	8.5	7.8	8.9	9.3	9.8	10.3
0	-25	5.1	5.8	6.1	6.4	6.7	5.6	6.4	6.7	7.0	7.4	6.2	7.0	7.4	7.7	8.1	7.5	8.5	8.9	9.4	9.9
0	-20	4.8	5.5	5.7	6.0	6.3	5.3	6.1	6.3	6.6	7.0	5.9	6.7	7.0	7.3	7.7	7.1	8.1	8.5	8.9	9.4
0	-15	4.5	5.1	5.4	5.6	5.9	5.0	5.7	6.0	6.3	6.6	5.6	6.3	6.6	6.9	7.3	6.8	7.7	8.1	8.5	8.9
	-10	4.2	4.8	5.0	5.3	5.5	4.7	5.4	5.6	5.9	6.2	5.3	6.0	6.3	6.6	6.9	6.4	7.3	7.7	8.1	8.5
	-5	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.3	5.5	5.8	4.9	5.6	5.9	6.2	6.5	6.1	6.9	7.3	7.6	8.0
	0	3.6	4.1	4.3	4.5	4.8	4.1	4.7	4.9	5.1	5.4	4.6	5.2	5.5	5.8	6.0	5.7	6.5	6.8	7.2	7.5
	5	3.2	3.7	3.9	4.0	4.2	3.7	4.2	4.4	4.6	4.8	4.2	4.8	5.0	5.2	5.5	5.3	6.0	6.3	6.6	6.9
	10	2.8	3.2	3.4	3.5	3.7	3.3	3.7	3.9	4.1	4.3	3.7	4.3	4.5	4.7	4.9	4.8	5.5	5.7	6.0	6.3
	15	2.4	2.7	2.9	3.0	3.2	2.8	3.2	3.4	3.5	3.7	3.3	3.7	3.9	4.1	4.3	4.3	4.9	5.1	5.4	5.6
	20	1.9	2.2	2.3	2.4	2.6	2.3	2.7	2.8	2.9	3.1	2.8	3.2	3.3	3.5	3.7	3.7	4.3	4.5	4.7	4.9
	25	1.5	1.7	1.8	1.9	2.0	1.8	2.1	2.2	2.4	2.5	2.3	2.6	2.7	2.9	3.0	3.2	3.7	3.9	4.0	4.3
	30	1.1	1.3	1.4	1.5	1.6	1.5	1.7	1.8	1.9	2.1	1.9	2.2	2.3	2.4	2.6	2.8	3.2	3.4	3.6	3.8
1	-35	5.1	5.8	6.1	6.3	6.7	5.6	6.4	6.7	7.0	7.4	6.2	7.0	7.4	7.7	8.1	7.5	8.5	8.9	9.4	9.8
4	-30	4.8	5.5	5.7	6.0	6.3	5.3	6.1	6.3	6.6	7.0	5.9	6.7	7.0	7.3	7.7	7.1	8.1	8.5	8.9	9.4
0	-25	4.5	5.2	5.4	5.7	5.9	5.0	5.7	6.0	6.3	6.6	5.6	6.3	6.6	7.0	7.3	6.8	7.7	8.1	8.5	9.0
0	-20	4.3	4.9	5.1	5.3	5.6	4.8	5.4	5.7	5.9	6.2	5.3	6.0	6.3	6.6	6.9	6.5	7.4	7.7	8.1	8.5
0	-15	4.0	4.5	4.8	5.0	5.2	4.5	5.1	5.3	5.6	5.9	5.0	5.7	5.9	6.2	6.5	6.2	7.0	7.3	7.7	8.1
	-10	3.7	4.2	4.4	4.6	4.9	4.2	4.8	5.0	5.2	5.5	4.7	5.3	5.6	5.9	6.2	5.8	6.6	7.0	7.3	7.7
	-5	3.4	3.9	4.1	4.3	4.5	3.9	4.4	4.6	4.9	5.1	4.4	5.0	5.2	5.5	5.7	5.5	6.3	6.6	6.9	7.2
	0	3.1	3.6	3.7	3.9	4.1	3.6	4.1	4.2	4.5	4.7	4.1	4.6	4.8	5.1	5.3	5.1	5.8	6.1	6.4	6.7
	5	2.8	3.1	3.3	3.4	3.6	3.2	3.6	3.8	4.0	4.2	3.7	4.2	4.4	4.6	4.8	4.7	5.4	5.6	5.9	6.2
	10	2.4	2.7	2.9	3.0	3.1	2.8	3.2	3.4	3.5	3.7	3.3	3.7	3.9	4.1	4.3	4.3	4.9	5.1	5.4	5.6
	15	1.9	2.2	2.3	2.5	2.6	2.3	2.7	2.8	3.0	3.1	2.8	3.2	3.3	3.5	3.7	3.8	4.3	4.5	4.7	5.0
	20	1.5	1.7	1.8	1.9	2.0	1.9	2.2	2.3	2.4	2.5	2.3	2.6	2.8	2.9	3.1	3.3	3.7	3.9	4.1	4.3
	25	1.0	1.2	1.3	1.4	1.5	1.4	1.7	1.7	1.8	2.0	1.8	2.1	2.2	2.3	2.5	2.7	3.1	3.3	3.4	3.6
	30	.9	1.1	1.1	1.2	1.3	1.3	1.5	1.6	1.7	1.8	1.7	1.9	2.0	2.1	2.3	2.5	2.9	3.1	3.2	3.4

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.

Figure 4-31 (Sheet 8 of 8)

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT
FLAPS - 15°CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																									
		16300					16000					15500					15000					14500					
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
0	-25	4.8	5.6	6.0	6.3	6.7	5.1	6.0	6.3	6.7	7.1	5.6	6.5	6.9	7.3	7.8	6.1	7.1	7.6	8.0	8.5	6.7	7.8	8.3	8.8	9.3	
	-20	4.8	5.6	5.9	6.3	6.7	5.1	5.9	6.3	6.7	7.1	5.6	6.5	6.9	7.3	7.8	6.1	7.1	7.5	8.0	8.5	6.7	7.8	8.3	8.8	9.3	
	-15	4.8	5.6	5.9	6.3	6.7	5.1	5.9	6.3	6.7	7.1	5.6	6.5	6.9	7.3	7.8	6.1	7.1	7.5	8.0	8.5	6.7	7.8	8.3	8.8	9.3	
	-10	4.8	5.6	6.0	6.3	6.7	5.1	6.0	6.3	6.7	7.1	5.6	6.5	6.9	7.3	7.8	6.1	7.2	7.6	8.0	8.5	6.7	7.8	8.3	8.8	9.3	
	-5	4.8	5.6	6.0	6.3	6.7	5.1	6.0	6.3	6.7	7.1	5.6	6.5	6.9	7.3	7.8	6.1	7.1	7.6	8.0	8.5	6.7	7.8	8.3	8.8	9.3	
	0	4.8	5.6	5.9	6.3	6.7	5.1	5.9	6.3	6.6	7.0	5.6	6.5	6.9	7.3	7.7	6.1	7.1	7.5	8.0	8.5	6.7	7.8	8.2	8.7	9.3	
	5	4.8	5.6	5.9	6.3	6.6	5.1	5.9	6.3	6.6	7.0	5.6	6.5	6.9	7.2	7.7	6.1	7.1	7.5	7.9	8.4	6.7	7.8	8.2	8.7	9.2	
	10	4.8	5.6	5.9	6.2	6.6	5.1	5.9	6.2	6.6	7.0	5.6	6.5	6.8	7.2	7.7	6.1	7.1	7.5	7.9	8.4	6.7	7.8	8.2	8.7	9.2	
	15	4.8	5.6	5.9	6.2	6.6	5.1	5.9	6.2	6.6	7.0	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.5	7.9	8.4	6.7	7.7	8.2	8.6	9.2	
	20	4.7	5.4	5.7	6.0	6.4	5.0	5.7	6.1	6.4	6.8	5.4	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.2	6.5	7.6	8.0	8.4	8.9	
1	25	4.6	5.3	5.6	5.9	6.2	4.8	5.6	5.9	6.2	6.6	5.3	6.1	6.5	6.8	7.2	5.8	6.7	7.1	7.5	7.9	6.4	7.4	7.8	8.2	8.7	
	30	4.1	4.7	5.0	5.2	5.5	4.3	5.0	5.3	5.6	5.9	4.8	5.5	5.8	6.2	6.5	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.1	7.5	7.9	
	35	3.5	4.0	4.3	4.5	4.8	3.7	4.3	4.6	4.8	5.1	4.2	4.8	5.1	5.4	5.7	4.6	5.4	5.7	6.0	6.3	5.1	5.9	6.3	6.6	7.0	
	40	2.9	3.3	3.5	3.7	3.9	3.1	3.6	3.8	4.0	4.3	3.5	4.1	4.3	4.6	4.8	4.0	4.6	4.9	5.1	5.4	4.4	5.2	5.4	5.8	6.1	
	45	2.2	2.6	2.8	2.9	3.1	2.5	2.9	3.1	3.2	3.4	2.9	3.3	3.5	3.7	4.0	3.3	3.8	4.0	4.3	4.5	3.7	4.4	4.6	4.9	5.2	
	50	1.6	1.9	2.0	2.2	2.3	1.8	2.2	2.3	2.5	2.6	2.2	2.6	2.8	2.9	3.1	2.6	3.1	3.2	3.4	3.7	3.0	3.6	3.8	4.0	4.2	
	54	1.1	1.3	1.4	1.5	1.6	1.3	1.6	1.7	1.8	1.9	1.7	2.0	2.1	2.2	2.4	2.0	2.4	2.6	2.7	2.9	2.5	2.9	3.1	3.3	3.5	
	0	-25	4.9	5.8	6.1	6.5	6.9	5.2	6.1	6.4	6.8	7.3	5.7	6.7	7.0	7.5	7.9	6.3	7.3	7.7	8.2	8.7	6.8	8.0	8.4	8.9	9.5
	0	-20	4.9	5.8	6.1	6.4	6.8	5.2	6.1	6.4	6.8	7.2	5.7	6.7	7.0	7.5	7.9	6.3	7.3	7.7	8.2	8.7	6.8	8.0	8.4	8.9	9.5
	0	-15	5.0	5.8	6.1	6.4	6.8	5.2	6.1	6.4	6.8	7.2	5.7	6.7	7.0	7.5	7.9	6.3	7.3	7.7	8.2	8.7	6.8	8.0	8.4	8.9	9.5
0	-10	5.0	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.7	6.7	7.0	7.5	7.9	6.3	7.3	7.7	8.2	8.7	6.9	8.0	8.4	8.9	9.5	
	-5	5.0	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.7	6.7	7.0	7.4	7.9	6.3	7.3	7.7	8.1	8.6	6.9	8.0	8.4	8.9	9.4	
	0	5.0	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.0	7.4	7.9	6.3	7.3	7.7	8.1	8.6	6.9	8.0	8.4	8.9	9.4	
	5	5.0	5.8	6.1	6.4	6.8	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.0	7.4	7.8	6.3	7.3	7.7	8.1	8.6	6.9	7.9	8.4	8.9	9.4	
	10	5.0	5.7	6.0	6.4	6.8	5.3	6.1	6.4	6.7	7.1	5.7	6.6	7.0	7.4	7.8	6.3	7.3	7.7	8.1	8.6	6.9	7.9	8.4	8.8	9.4	
	15	4.8	5.6	5.9	6.2	6.6	5.1	5.9	6.2	6.6	6.9	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.5	7.9	8.4	6.7	7.8	8.2	8.6	9.1	
	20	4.5	5.2	5.5	5.8	6.1	4.8	5.5	5.8	6.2	6.5	5.3	6.1	6.4	6.8	7.2	5.8	6.7	7.0	7.4	7.9	6.4	7.3	7.7	8.2	8.6	
	25	4.2	4.8	5.1	5.4	5.7	4.4	5.1	5.4	5.7	6.0	4.9	5.7	6.0	6.3	6.7	5.4	6.2	6.6	6.9	7.3	5.9	6.9	7.2	7.6	8.1	
	30	3.6	4.2	4.4	4.6	4.9	3.8	4.4	4.7	4.9	5.2	4.3	5.0	5.2	5.5	5.8	4.8	5.5	5.8	6.1	6.5	5.3	6.1	6.4	6.8	7.2	
	35	3.0	3.5	3.7	3.9	4.1	3.2	3.8	4.0	4.2	4.4	3.7	4.3	4.5	4.7	5.0	4.1	4.8	5.0	5.3	5.6	4.6	5.3	5.6	5.9	6.3	
2	40	2.4	2.8	3.0	3.1	3.3	2.6	3.1	3.2	3.4	3.6	3.0	3.5	3.7	3.9	4.2	3.5	4.0	4.3	4.5	4.8	3.9	4.6	4.8	5.1	5.4	
	45	1.8	2.1	2.3	2.4	2.5	2.0	2.4	2.5	2.7	2.8	2.4	2.8	3.0	3.2	3.4	2.8	3.3	3.5	3.7	3.9	3.2	3.8	4.0	4.2	4.5	
	50	1.2	1.5	1.6	1.7	1.8	1.4	1.7	1.8	1.9	2.1	1.8	2.1	2.2	2.4	2.5	2.2	2.6	2.7	2.9	3.1	2.6	3.0	3.2	3.4	3.6	
	52	.9	1.1	1.2	1.3	1.4	1.1	1.4	1.5	1.6	1.7	1.5	1.8	1.9	2.0	2.2	1.9	2.2	2.3	2.5	2.7	2.3	2.7	2.8	3.0	3.2	
	0	-25	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	7.0	7.4	5.9	6.8	7.2	7.6	8.1	6.4	7.4	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.7
	0	-20	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	7.0	7.4	5.9	6.8	7.2	7.6	8.1	6.4	7.4	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.6
	0	-15	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	6.9	7.4	5.9	6.8	7.2	7.6	8.1	6.4	7.4	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.6
	-10	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	6.9	7.4	5.9	6.8	7.2	7.6	8.0	6.4	7.4	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.6	
	-5	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	6.9	7.3	5.9	6.8	7.2	7.6	8.0	6.4	7.5	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.6	
	0	5.1	5.9	6.2	6.6	7.0	5.4	6.2	6.6	6.9	7.3	5.9	6.8	7.2	7.6	8.0	6.5	7.5	7.9	8.3	8.8	7.0	8.1	8.6	9.1	9.6	
3	5	5.1	5.9	6.2	6.6	6.9	5.4	6.2	6.6	6.9	7.3	5.9	6.8	7.2	7.6	8.0	6.5	7.4	7.8	8.3	8.8	7.0	8.1	8.6	9.0	9.6	
	10	5.1	5.9	6.2	6.5	6.9	5.4	6.2	6.5	6.9	7.3	5.9	6.8	7.2	7.6	8.0	6.5	7.4	7.8	8.3	8.7	7.0	8.1	8.5	9.0	9.5	
	15	4.7	5.4	5.7	6.0	6.4	5.0	5.8	6.1	6.4	6.8	5.5	6.3	6.7	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9	
	20	4.2	4.9	5.1	5.4	5.7	4.5	5.2	5.5	5.8	6.1	5.0	5.7	6.0	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	
	25	3.7	4.3	4.5	4.7	5.0	3.9	4.6	4.8	5.1	5.3	4.4	5.1	5.3	5.6	6.0	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.5	6.9	7.3	
	30	3.1	3.6	3.8	4.0	4.2	3.4	3.9	4.1	4.3	4.6	3.8	4.4	4.6	4.9	5.2	4.2	4.9	5.2	5.5	5.8	4.7	5.5	5.8	6.1	6.4	
	35	2.5	3.0	3.1	3.3	3.5	2.8	3.2	3.4	3.6	3.8	3.2	3.7	3.9	4.1	4.4	3.6	4.2	4.4	4.7	4.9	4.1	4.7	5.0	5.3	5.6	
	40	2.0	2.3	2.4	2.6	2.7	2.2	2.6	2.7	2.9	3.0	2.6	3.0	3.2	3.4	3.6	3.0	3.5	3.7	3.9	4.1	3.4	4.0	4.2	4.5	4.7	
	45	1.4	1.6	1.8	1.9	2.0	1.6	1.9	2.0	2.1	2.3	2.0	2.3	2.5	2.6	2.8	2.4	2.8	2.9	3.1	3.3	2.8	3.3	3.4	3.6	3.9	
	50	.8	1.0	1.1	1.2	1.3	1.0	1.2	1.3	1.4	1.5	1.4	1.6	1.8	1.9	2.0	1.7	2.1	2.2	2.3	2.5	2.2	2.5	2.7	2.8	3.0	
0	-30	5.2	6.0	6.4	6.7	7.1	5.5	6.4	6.7	7.1	7.5	6.0	7.0	7.3	7.8	8.2	6.5	7.6	8.0	8.5	9.0	7.1	8.3	8.7	9.2	9.8	
	-25	5.2	6.0	6.4	6.7	7.1	5.5	6.4	6.7	7.1	7.5	6.0	6.9	7.3	7.7	8.2	6.5	7.6	8.0	8.4	9.0	7.1	8.2	8.7	9.2	9.8	
	-20	5.2	6.0</																								

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																																					
		14000					13500					13000					12000					11000																	
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS																	
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30									
0	-25	7.3	8.5	9.0	9.6	10.2	7.9	9.3	9.8	10.5	11.1	8.6	10.1	10.7	11.4	12.2	10.3	12.0	12.7	13.5	14.4	12.2	14.2	15.0	15.9	17.0	12.2	14.2	15.0	15.9	16.9								
	-20	7.3	8.5	9.0	9.6	10.2	7.9	9.3	9.8	10.4	11.1	8.6	10.1	10.7	11.4	12.1	10.3	12.0	12.7	13.5	14.4	12.2	14.2	15.0	15.9	16.9	12.2	14.2	15.0	15.9	16.9								
	-15	7.3	8.5	9.0	9.6	10.2	7.9	9.3	9.8	10.4	11.1	8.6	10.1	10.7	11.4	12.1	10.3	12.0	12.7	13.5	14.4	12.2	14.2	15.0	15.9	16.9	12.2	14.2	15.0	15.9	16.9								
	-10	7.3	8.5	9.0	9.6	10.2	8.0	9.3	9.8	10.4	11.1	8.7	10.1	10.7	11.4	12.1	10.3	12.0	12.7	13.5	14.4	12.2	14.2	15.0	15.9	16.9	12.2	14.2	15.0	15.9	16.9								
	-5	7.3	8.5	9.0	9.6	10.2	8.0	9.3	9.8	10.4	11.1	8.7	10.1	10.7	11.4	12.1	10.3	12.0	12.7	13.5	14.3	12.2	14.2	15.0	15.9	16.8	12.2	14.2	15.0	15.9	16.8								
	0	7.3	8.5	9.0	9.5	10.1	8.0	9.3	9.8	10.4	11.0	8.7	10.1	10.7	11.3	12.0	10.3	12.0	12.7	13.4	14.3	12.2	14.2	15.0	15.8	16.8	12.2	14.2	15.0	15.8	16.8								
	5	7.3	8.5	9.0	9.5	10.1	8.0	9.2	9.8	10.3	11.0	8.7	10.1	10.6	11.3	12.0	10.3	12.0	12.7	13.4	14.2	12.2	14.2	14.9	15.8	16.7	12.2	14.2	14.9	15.8	16.7								
	10	7.3	8.5	8.9	9.5	10.0	8.0	9.2	9.8	10.3	11.0	8.7	10.1	10.6	11.3	12.0	10.3	12.0	12.6	13.4	14.2	12.2	14.1	14.9	15.7	16.7	12.2	14.1	14.9	15.7	16.7								
	15	7.3	8.5	8.9	9.4	10.0	8.0	9.2	9.7	10.3	10.9	8.7	10.0	10.6	11.2	11.9	10.3	12.0	12.6	13.4	14.2	12.2	14.1	14.9	15.7	16.6	12.2	14.1	14.9	15.7	16.6								
	20	7.1	8.3	8.7	9.2	9.8	7.8	9.0	9.5	10.1	10.7	8.5	9.8	10.4	11.0	11.7	10.1	11.7	12.4	13.1	13.9	12.0	13.9	14.6	15.5	16.4	12.0	13.9	14.6	15.5	16.4								
	25	7.0	8.1	8.5	9.0	9.5	7.6	8.8	9.3	9.8	10.4	8.3	9.6	10.2	10.8	11.4	9.9	11.5	12.1	12.8	13.6	11.8	13.7	14.4	15.2	16.1	11.8	13.7	14.4	15.2	16.1								
	30	6.4	7.4	7.8	8.2	8.7	7.0	8.1	8.6	9.1	9.6	7.7	8.9	9.4	9.9	10.5	9.2	10.7	11.3	11.9	12.7	11.1	12.8	13.5	14.3	15.1	11.1	12.8	13.5	14.3	15.1								
0	35	5.7	6.6	6.9	7.3	7.8	6.3	7.3	7.7	8.1	8.6	6.9	8.0	8.5	8.9	9.5	8.3	9.7	10.2	10.8	11.5	10.1	11.7	12.4	13.1	13.9	10.1	11.7	12.4	13.1	13.9								
	40	4.9	5.7	6.1	6.4	6.8	5.5	6.4	6.7	7.1	7.6	6.1	7.1	7.5	7.9	8.4	7.5	8.7	9.2	9.7	10.3	9.1	10.6	11.2	11.9	12.6	9.1	10.6	11.2	11.9	12.6								
	45	4.2	4.9	5.2	5.5	5.8	4.7	5.5	5.8	6.2	6.5	5.3	6.2	6.5	6.9	7.3	6.6	7.7	8.1	8.6	9.1	8.1	9.5	10.0	10.7	11.3	8.1	9.5	10.0	10.7	11.3								
	50	3.5	4.1	4.3	4.6	4.9	4.0	4.7	4.9	5.2	5.5	4.5	5.3	5.6	5.9	6.3	5.7	6.7	7.1	7.5	8.0	7.2	8.4	8.9	9.4	10.1	7.2	8.4	8.9	9.4	10.1								
	54	2.9	3.4	3.6	3.8	4.1	3.4	3.9	4.2	4.4	4.7	3.9	4.5	4.8	5.1	5.4	5.0	5.9	6.2	6.6	7.0	6.4	7.5	7.9	8.4	9.0	6.4	7.5	7.9	8.4	9.0								
	1	-25	7.4	8.7	9.2	9.7	10.4	8.1	9.4	10.0	10.6	11.3	8.8	10.3	10.9	11.6	12.3	10.5	12.2	12.9	13.7	14.6	12.4	14.4	15.2	16.1	17.1	12.4	14.4	15.2	16.1	17.1							
	0	-20	7.4	8.7	9.2	9.7	10.3	8.1	9.4	10.0	10.6	11.3	8.8	10.3	10.9	11.5	12.3	10.5	12.2	12.9	13.7	14.6	12.4	14.4	15.2	16.1	17.1	12.4	14.4	15.2	16.1	17.1							
	0	-15	7.5	8.7	9.2	9.7	10.3	8.1	9.4	10.0	10.6	11.3	8.8	10.3	10.9	11.5	12.3	10.5	12.2	12.9	13.7	14.5	12.4	14.4	15.2	16.1	17.0	12.4	14.4	15.2	16.1	17.0							
	0	-10	7.5	8.7	9.2	9.7	10.3	8.1	9.5	10.0	10.6	11.3	8.8	10.3	10.9	11.5	12.3	10.5	12.2	12.9	13.7	14.5	12.4	14.4	15.2	16.1	17.0	12.4	14.4	15.2	16.1	17.0							
	0	-5	7.5	8.7	9.2	9.7	10.3	8.1	9.4	10.0	10.6	11.2	8.8	10.3	10.9	11.5	12.2	10.5	12.2	12.9	13.7	14.5	12.5	14.4	15.2	16.0	17.0	12.5	14.4	15.2	16.0	17.0							
	0	0	7.5	8.7	9.2	9.7	10.3	8.1	9.4	10.0	10.6	11.2	8.8	10.3	10.8	11.5	12.2	10.5	12.2	12.9	13.6	14.5	12.5	14.4	15.2	16.0	17.0	12.5	14.4	15.2	16.0	17.0							
0	5	7.5	8.7	9.1	9.7	10.2	8.1	9.4	10.0	10.5	11.2	8.8	10.3	10.8	11.5	12.2	10.5	12.2	12.9	13.6	14.4	12.5	14.4	15.1	16.0	16.9	12.5	14.4	15.1	16.0	16.9								
	10	7.5	8.6	9.1	9.6	10.2	8.1	9.4	9.9	10.5	11.1	8.8	10.2	10.8	11.4	12.1	10.5	12.2	12.8	13.6	14.4	12.5	14.4	15.1	15.9	16.9	12.5	14.4	15.1	15.9	16.9								
	15	7.3	8.5	8.9	9.4	10.0	8.0	9.2	9.7	10.3	10.9	8.7	10.1	10.6	11.2	11.9	10.4	12.0	12.6	13.3	14.1	12.3	14.1	14.9	15.7	16.6	12.3	14.1	14.9	15.7	16.6								
	20	6.9	8.0	8.5	8.9	9.5	7.6	8.8	9.3	9.8	10.4	8.3	9.6	10.1	10.7	11.3	9.9	11.4	12.1	12.8	13.5	11.8	13.6	14.3	15.1	16.0	11.8	13.6	14.3	15.1	16.0								
	25	6.5	7.5	7.9	8.4	8.9	7.1	8.3	8.7	9.2	9.7	7.8	9.0	9.5	10.1	10.7	9.3	10.8	11.4	12.1	12.8	11.2	13.0	13.7	14.4	15.3	11.2	13.0	13.7	14.4	15.3								
	30	5.8	6.7	7.1	7.5	7.9	6.4	7.4	7.8	8.3	8.8	7.1	8.2	8.6	9.1	9.7	8.5	9.9	10.4	11.0	11.7	10.3	11.9	12.6	13.3	14.1	10.3	11.9	12.6	13.3	14.1								
	35	5.1	5.9	6.3	6.6	7.0	5.7	6.6	6.9	7.3	7.8	6.3	7.3	7.7	8.1	8.6	7.7	8.9	9.4	10.0	10.6	9.3	10.8	11.5	12.1	12.9	9.3	10.8	11.5	12.1	12.9								
	40	4.4	5.1	5.4	5.7	6.1	4.9	5.7	6.1	6.4	6.8	5.5	6.4	6.8	7.2	7.6	6.8	7.9	8.4	8.9	9.4	8.4	9.8	10.3	11.0	11.7	8.4	9.8	10.3	11.0	11.7								
	45	3.7	4.3	4.6	4.8	5.1	4.2	4.9	5.2	5.5	5.8	4.8	5.5	5.9	6.2	6.6	6.0	7.0	7.4	7.8	8.3	7.5	8.7	9.2	9.8	10.4	7.5	8.7	9.2	9.8	10.4								
	50	3.0	3.6	3.8	4.0	4.2	3.5	4.1	4.3	4.6	4.9	4.0	4.7	5.0	5.3	5.6	5.2	6.0	6.4	6.8	7.2	6.6	7.7	8.1	8.6	9.2	6.6	7.7	8.1	8.6	9.2								
	52	2.7	3.2	3.4	3.6	3.8	3.2	3.7	3.9	4.2	4.4	3.7	4.3	4.5	4.8	5.1	4.8	5.6	5.9	6.3	6.7	6.1	7.2	7.6	8.1	8.6	6.1	7.2	7.6	8.1	8.6								
2	-25	7.6	8.8	9.3	9.9	10.5	8.3	9.6	10.2	10.8	11.5	9.0	10.5	11.1	11.7	12.5	10.7	12.4	13.1	13.9	14.8	12.6	14.6	15.4	16.3	17.3	12.6	14.6	15.4	16.3	17.3								
	-20	7.6	8.8	9.3	9.9	10.5	8.3	9.6	10.2	10.8	11.4	9.0	10.4	11.0	11.7	12.5	10.7	12.4	13.1	13.9	14.7	12.6	14.6	15.4	16.3	17.2	12.6	14.6	15.4	16.3	17.2								
	-15	7.6	8.8	9.3	9.9	10.5	8.3	9.6	10.2	10.7	11.4	9.0	10.4	11.0	11.7	12.4	10.7	12.4	13.1	13.9	14.7	12.6	14.6	15.4	16.2	17.2	12.6	14.6	15.4	16.2	17.2								
	-10	7.6	8.8	9.3	9.9	10.5	8.3	9.6	10.1	10.7	11.4	9.0	10.5	11.0	11.7	12.4	10.7	12.4	13.1	13.8	14.7	12.6	14.6	15.4	16.2	17.2	12.6	14.6	15.4	16.2	17.2								
	-5	7.6	8.8	9.3	9.9	10.5	8.3	9.6	10.2	10.7	11.4	9.0	10.5	11.0	11.7	12.4	10.7	12.4	13.1	13.8	14.7	12.7	14.6	15.4	16.2	17.2	12.7	14.6	15.4	16.2	17.2								
	0	7.7	8.9	9.3	9.9	10.4	8.3	9.6	10.2	10.7	11.4	9.0	10.5	11.0	11.7	12.4	10.8	12.4	13.1	13.8	14.6	12.7	14.6	15.4	16.2	17.1	12.7	14.6	15.4	16.2	17.1								
	5	7.7	8.8	9.3	9.8	10.4	8.3	9.6	10.1	10.7	11.3	9.0	10.5	11.0	11.6	12.3	10.8	12.4	13.1	13.8	14.6	12.7	14.6	15.3	16.2	17.1	12.7	14.6	15.3	16.2	17.1								
	10	7.7	8.8	9.3	9.8	10.4	8.3	9.6	10.1	10.7	11.3	9.0	10.4	11.0	11.6	12.3	10.8	12.4	13.0</																				

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15⁰

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	5.3	6.2	6.5	6.9	7.3	5.6	6.5	6.8	7.2	7.7	6.1	7.1	7.5	7.9	8.4	6.7	7.7	8.1	8.6	9.1	7.3	8.4	8.9	9.4	9.9
	-25	5.3	6.1	6.5	6.8	7.2	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.4	7.9	8.3	6.7	7.7	8.1	8.6	9.1	7.2	8.4	8.8	9.3	9.9
	-20	5.3	6.1	6.5	6.8	7.2	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.4	7.9	8.3	6.7	7.7	8.1	8.6	9.1	7.3	8.4	8.8	9.3	9.9
	-15	5.3	6.2	6.5	6.8	7.2	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.4	7.9	8.3	6.7	7.7	8.1	8.6	9.1	7.3	8.4	8.8	9.3	9.9
	-10	5.3	6.1	6.5	6.8	7.2	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.4	7.8	8.3	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-5	5.3	6.1	6.5	6.8	7.2	5.6	6.5	6.8	7.2	7.6	6.1	7.1	7.4	7.8	8.3	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	0	5.1	5.9	6.2	6.5	6.9	5.4	6.2	6.5	6.9	7.2	5.9	6.8	7.1	7.5	7.9	6.4	7.4	7.8	8.2	8.7	7.0	8.1	8.5	8.9	9.5
	5	4.8	5.6	5.8	6.2	6.5	5.1	5.9	6.2	6.5	6.9	5.6	6.4	6.8	7.1	7.5	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0
	10	4.4	5.1	5.3	5.6	5.9	4.7	5.4	5.6	5.9	6.3	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.6	6.2	7.1	7.5	7.9	8.3
	15	3.8	4.4	4.6	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.5	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.8	5.5	6.4	6.7	7.1	7.5
5000	-30	5.5	6.3	6.6	7.0	7.4	5.8	6.6	7.0	7.4	7.8	6.3	7.2	7.6	8.0	8.4	6.8	7.8	8.3	8.7	9.2	7.4	8.5	9.0	9.5	10.0
	-25	5.5	6.3	6.6	7.0	7.4	5.8	6.6	7.0	7.4	7.8	6.3	7.3	7.7	8.1	8.6	6.9	7.9	8.3	8.8	9.3	7.4	8.6	9.1	9.6	10.1
	-20	5.5	6.3	6.6	7.0	7.3	5.7	6.6	7.0	7.3	7.7	6.3	7.2	7.6	8.0	8.4	6.8	7.8	8.3	8.7	9.2	7.4	8.5	9.0	9.5	10.0
	-15	5.4	6.2	6.5	6.8	7.2	5.7	6.5	6.8	7.2	7.6	6.2	7.1	7.5	7.9	8.3	6.7	7.7	8.1	8.6	9.1	7.3	8.4	8.9	9.3	9.9
	-10	5.2	6.0	6.3	6.6	7.0	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.2	7.6	8.1	6.5	7.5	7.9	8.3	8.8	7.1	8.2	8.6	9.1	9.6
	-5	5.0	5.8	6.0	6.4	6.7	5.3	6.1	6.4	6.7	7.1	5.8	6.6	7.0	7.4	7.8	6.3	7.3	7.6	8.0	8.5	6.9	7.9	8.3	8.8	9.3
	0	4.7	5.4	5.7	6.0	6.3	5.0	5.7	6.0	6.3	6.7	5.4	6.3	6.6	6.9	7.3	6.0	6.9	7.2	7.6	8.0	6.5	7.5	7.9	8.3	8.8
	5	4.4	5.0	5.3	5.6	5.9	4.7	5.3	5.6	5.9	6.2	5.1	5.9	6.2	6.5	6.9	5.6	6.5	6.8	7.2	7.5	6.2	7.1	7.5	7.9	8.3
	10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	15	3.3	3.8	4.0	4.2	4.5	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.9	5.1	5.4	4.5	5.1	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7
6000	-30	5.7	6.5	6.8	7.2	7.6	6.0	6.9	7.2	7.6	8.0	6.5	7.5	7.8	8.3	8.7	7.0	8.1	8.5	9.0	9.5	7.6	8.8	9.3	9.8	10.3
	-25	5.6	6.4	6.8	7.1	7.5	5.9	6.8	7.1	7.5	7.9	6.4	7.4	7.8	8.2	8.6	7.0	8.0	8.4	8.9	9.4	7.6	8.7	9.2	9.7	10.2
	-20	5.6	6.4	6.7	7.0	7.4	5.9	6.7	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.5	6.9	8.0	8.4	8.8	9.3	7.5	8.6	9.1	9.6	10.1
	-15	5.3	6.0	6.3	6.7	7.0	5.6	6.4	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9	7.2	8.3	8.7	9.2	9.7
	-10	4.9	5.7	5.9	6.3	6.6	5.2	6.0	6.3	6.6	7.0	5.7	6.5	6.9	7.2	7.6	6.2	7.2	7.5	7.9	8.4	6.8	7.8	8.2	8.7	9.1
	-5	4.6	5.3	5.5	5.8	6.1	4.9	5.6	5.9	6.2	6.5	5.3	6.1	6.4	6.8	7.2	5.9	6.7	7.1	7.4	7.9	6.4	7.4	7.7	8.2	8.6
	0	4.3	4.9	5.1	5.4	5.7	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.6	7.0	7.3	6.0	6.9	7.3	7.6	8.1
	5	3.8	4.4	4.6	4.9	5.1	4.1	4.7	4.9	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.7	5.5	6.4	6.7	7.1	7.4
	10	3.3	3.8	4.0	4.3	4.5	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.9	5.1	5.4	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7
	15	2.8	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.2	3.5	4.0	4.2	4.5	4.7	3.9	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.6	6.0
7000	-30	5.6	6.4	6.7	7.1	7.5	5.9	6.8	7.1	7.5	7.9	6.4	7.4	7.8	8.2	8.6	7.0	8.0	8.4	8.9	9.4	7.6	8.7	9.2	9.7	10.2
	-25	5.6	6.4	6.7	7.0	7.4	5.9	6.7	7.1	7.4	7.8	6.4	7.3	7.7	8.1	8.5	6.9	8.0	8.4	8.8	9.3	7.5	8.6	9.1	9.6	10.1
	-20	5.3	6.0	6.3	6.7	7.0	5.6	6.4	6.7	7.0	7.4	6.1	7.0	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9	7.2	8.3	8.7	9.2	9.7
	-15	4.9	5.7	5.9	6.3	6.6	5.2	6.0	6.3	6.6	7.0	5.7	6.5	6.9	7.2	7.6	6.2	7.2	7.5	7.9	8.4	6.8	7.8	8.2	8.7	9.1
	-10	4.6	5.3	5.5	5.8	6.1	4.9	5.6	5.9	6.2	6.5	5.3	6.1	6.4	6.8	7.2	5.9	6.7	7.1	7.4	7.9	6.4	7.4	7.7	8.2	8.6
	-5	4.3	4.9	5.1	5.4	5.7	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7	5.5	6.3	6.6	7.0	7.3	6.0	6.9	7.3	7.6	8.1
	0	3.8	4.4	4.6	4.9	5.1	4.1	4.7	4.9	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.0	5.8	6.1	6.4	6.7	5.5	6.4	6.7	7.1	7.4
	5	3.3	3.8	4.0	4.3	4.5	3.6	4.1	4.3	4.6	4.8	4.0	4.6	4.9	5.1	5.4	4.5	5.2	5.4	5.7	6.0	5.0	5.7	6.0	6.3	6.7
	10	2.8	3.3	3.4	3.6	3.8	3.1	3.5	3.7	3.9	4.2	3.5	4.0	4.2	4.5	4.7	3.9	4.5	4.8	5.0	5.3	4.4	5.1	5.4	5.6	6.0
	15	2.3	2.7	2.8	3.0	3.2	2.6	3.0	3.1	3.3	3.5	3.0	3.4	3.6	3.8	4.0	3.4	3.9	4.1	4.3	4.6	3.9	4.4	4.7	4.9	5.2

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
40 0 0 -15 -10 -5 0 5 10 15 20 25	-30	7.9	9.1	9.6	10.2	10.8	8.5	9.9	10.5	11.1	11.7	9.3	10.8	11.4	12.0	12.8	11.0	12.7	13.4	14.2	15.1	13.0	14.9	15.7	16.6	17.6
	-25	7.9	9.1	9.6	10.2	10.8	8.5	9.9	10.4	11.0	11.7	9.3	10.7	11.3	12.0	12.7	11.0	12.7	13.4	14.2	15.0	13.0	14.9	15.7	16.5	17.5
	-20	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.7	9.3	10.8	11.3	12.0	12.7	11.0	12.7	13.4	14.2	15.0	13.0	14.9	15.7	16.5	17.5
	-15	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.7	9.3	10.8	11.3	12.0	12.7	11.1	12.7	13.4	14.1	15.0	13.0	14.9	15.7	16.5	17.5
	-10	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.6	9.3	10.7	11.3	12.0	12.7	11.1	12.7	13.4	14.1	14.9	13.0	14.9	15.7	16.5	17.4
	-5	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.6	9.3	10.7	11.3	11.9	12.6	11.1	12.7	13.4	14.1	14.9	13.0	14.9	15.6	16.5	17.4
	0	7.6	8.8	9.2	9.7	10.3	8.3	9.6	10.1	10.6	11.2	9.0	10.4	10.9	11.5	12.2	10.7	12.3	13.0	13.7	14.5	12.7	14.5	15.3	16.1	16.9
	5	7.3	8.4	8.8	9.3	9.9	8.0	9.2	9.6	10.2	10.7	8.7	10.0	10.5	11.1	11.7	10.3	11.9	12.5	13.2	13.9	12.3	14.1	14.8	15.5	16.4
	10	6.8	7.8	8.2	8.6	9.1	7.4	8.5	9.0	9.5	10.0	8.1	9.3	9.8	10.4	11.0	9.7	11.1	11.7	12.4	13.1	11.6	13.3	14.0	14.7	15.6
	15	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.1	7.4	8.5	8.9	9.4	10.0	8.8	10.2	10.8	11.4	12.0	10.7	12.3	13.0	13.7	14.5
20	5.4	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.2	6.7	7.7	8.1	8.5	9.0	8.1	9.3	9.8	10.4	11.0	9.8	11.3	11.9	12.6	13.4	
25	4.8	5.5	5.8	6.2	6.5	5.3	6.2	6.5	6.9	7.3	5.9	6.9	7.2	7.6	8.1	7.3	8.4	8.9	9.4	10.0	8.9	10.3	10.9	11.5	12.2	
30 0 0 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 46	-30	4.2	4.8	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.4	5.2	6.1	6.4	6.8	7.2	6.5	7.6	8.0	8.4	8.9	8.1	9.4	9.9	10.4	11.1
	-25	3.5	4.1	4.3	4.6	4.9	4.0	4.7	4.9	5.2	5.5	4.6	5.3	5.6	5.9	6.3	5.8	6.7	7.1	7.5	7.9	7.3	8.4	8.9	9.4	10.0
	-20	2.9	3.4	3.6	3.8	4.0	3.4	4.0	4.2	4.4	4.7	3.9	4.6	4.8	5.1	5.4	5.1	5.9	6.2	6.6	7.0	6.4	7.5	7.9	8.4	8.9
	-15	2.3	2.7	2.9	3.0	3.2	2.8	3.2	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.5	4.3	5.1	5.3	5.7	6.0	5.6	6.6	6.9	7.3	7.8
	-10	2.1	2.5	2.6	2.8	3.0	2.6	3.0	3.2	3.4	3.6	3.1	3.6	3.8	4.0	4.2	4.1	4.8	5.1	5.4	5.7	5.4	6.3	6.6	7.0	7.5
	-5	7.5	8.6	9.1	9.6	10.1	8.2	9.4	9.9	10.4	11.0	8.9	10.2	10.8	11.3	12.0	10.6	12.2	12.8	13.5	14.2	12.5	14.3	15.1	15.8	16.7
	0	7.1	8.2	8.6	9.1	9.6	7.8	9.0	9.4	9.9	10.5	8.5	9.8	10.3	10.8	11.5	10.1	11.6	12.2	12.9	13.6	12.0	13.8	14.5	15.3	16.1
	5	6.8	7.8	8.2	8.6	9.1	7.4	8.5	8.9	9.4	10.0	8.1	9.3	9.8	10.3	10.9	9.6	11.1	11.7	12.3	13.0	11.6	13.3	13.9	14.7	15.5
	10	6.1	7.1	7.4	7.8	8.3	6.7	7.8	8.2	8.6	9.1	7.4	8.5	9.0	9.5	10.0	8.9	10.2	10.8	11.4	12.0	10.7	12.3	13.0	13.7	14.5
	15	5.5	6.3	6.7	7.0	7.4	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.1	8.1	9.4	9.9	10.4	11.0	9.9	11.4	12.0	12.7	13.4
20	4.9	5.6	5.9	6.2	6.6	5.4	6.3	6.6	7.0	7.4	6.0	7.0	7.3	7.7	8.2	7.4	8.5	9.0	9.5	10.1	9.0	10.4	11.0	11.6	12.3	
25	4.3	4.9	5.2	5.5	5.8	4.8	5.5	5.8	6.1	6.5	5.4	6.2	6.5	6.9	7.3	6.7	7.7	8.1	8.6	9.1	8.2	9.5	10.0	10.6	11.2	
30	3.7	4.2	4.5	4.7	5.0	4.2	4.8	5.1	5.4	5.7	4.7	5.4	5.7	6.1	6.4	5.9	6.9	7.2	7.7	8.1	7.4	8.6	9.1	9.6	10.2	
35	3.1	3.6	3.8	4.0	4.2	3.5	4.1	4.3	4.6	4.8	4.1	4.7	5.0	5.2	5.6	5.2	6.1	6.4	6.7	7.1	6.6	7.7	8.1	8.6	9.1	
40	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	3.4	4.0	4.2	4.4	4.7	4.5	5.3	5.5	5.9	6.2	5.8	6.8	7.2	7.6	8.0	
44	1.9	2.3	2.4	2.5	2.7	2.4	2.8	2.9	3.1	3.3	2.8	3.3	3.5	3.7	3.9	3.9	4.5	4.8	5.1	5.4	5.1	6.0	6.3	6.7	7.1	
60 0 0 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 42	-35	8.3	9.6	10.1	10.7	11.3	9.0	10.4	10.9	11.6	12.2	9.8	11.3	11.9	12.6	13.3	11.6	13.3	14.0	14.7	15.6	13.5	15.5	16.2	17.1	18.0
	-30	8.3	9.5	10.1	10.6	11.2	9.0	10.3	10.9	11.5	12.2	9.8	11.3	11.8	12.5	13.2	11.5	13.2	13.9	14.7	15.5	13.5	15.4	16.2	17.0	18.0
	-25	8.2	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.1	9.7	11.2	11.7	12.4	13.1	11.5	13.1	13.8	14.5	15.4	13.4	15.3	16.1	16.9	17.8
	-20	8.2	9.4	9.9	10.4	11.0	8.8	10.2	10.7	11.3	11.9	9.6	11.1	11.6	12.3	13.0	11.4	13.1	13.7	14.4	15.2	13.3	15.2	16.0	16.8	17.7
	-15	7.8	9.0	9.5	10.0	10.5	8.5	9.8	10.3	10.8	11.5	9.2	10.6	11.2	11.8	12.5	11.0	12.6	13.2	13.9	14.7	12.9	14.8	15.5	16.3	17.2
	-10	7.4	8.5	9.0	9.5	10.0	8.1	9.3	9.8	10.3	10.9	8.8	10.1	10.6	11.2	11.9	10.5	12.0	12.7	13.3	14.1	12.4	14.2	14.9	15.7	16.6
	-5	7.0	8.1	8.5	8.9	9.4	7.7	8.8	9.3	9.8	10.3	8.4	9.6	10.1	10.7	11.3	10.0	11.5	12.1	12.7	13.4	11.9	13.6	14.3	15.1	15.9
	0	6.6	7.6	8.0	8.4	8.9	7.2	8.3	8.7	9.2	9.7	7.9	9.1	9.6	10.1	10.6	9.4	10.9	11.4	12.1	12.8	11.3	13.0	13.7	14.4	15.2
	5	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.0	7.4	8.5	8.9	9.4	9.9	8.8	10.2	10.7	11.3	12.0	10.7	12.3	12.9	13.6	14.4
	10	5.5	6.3	6.7	7.0	7.4	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.1	8.2	9.4	9.9	10.4	11.0	9.9	11.4	12.0	12.7	13.4
15	4.9	5.7	6.0	6.3	6.6	5.5	6.3	6.6	7.0	7.4	6.1	7.0	7.4	7.8	8.2	7.5	8.6	9.1	9.6	10.1	9.1	10.5	11.0	11.7	12.4	
20	4.3	5.0	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.6	5.4	6.3	6.6	7.0	7.4	6.8	7.8	8.2	8.7	9.2	8.3	9.6	10.1	10.7	11.3	
25	3.8	4.3	4.6	4.8	5.1	4.3	4.9	5.2	5.5	5.8	4.8	5.6	5.9	6.2	6.5	6.1	7.0	7.4	7.8	8.2	7.5	8.7	9.2	9.7	10.3	
30	3.2	3.7	3.9	4.1	4.3	3.7	4.2	4.5	4.7	5.0	4.2	4.8	5.1	5.4	5.7	5.4	6.2	6.5	6.9	7.3	6.8	7.8	8.3	8.7	9.3	
35	2.6	3.0	3.2	3.4	3.6	3.1	3.6	3.7	4.0	4.2	3.6	4.1	4.3	4.6	4.9	4.7	5.4	5.7	6.0	6.4	6.0	7.0	7.3	7.8	8.2	
40	2.0	2.4	2.5	2.7	2.8	2.5	2.9	3.0	3.2	3.4	2.9	3.4	3.6	3.8	4.0	4.0	4.6	4.9	5.2	5.5	5.2	6.1	6.4	6.8	7.2	
42	1.7	2.0	2.2	2.3	2.4	2.1	2.5	2.7	2.8	3.0	2.6	3.0	3.2	3.4	3.6	3.6	4.2	4.5	4.7	5.0	4.9	5.7	6.0	6.3	6.7	
70 0 0 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40	-35	8.2	9.4	9.9	10.5	11.1	8.9	10.2	10.8	11.3	12.0	9.7	11.1	11.7	12.3	13.1	11.4	13.1	13.8	14.5	15.3	13.4	15.3	16.0	16.9	17.8
	-30	8.0	9.2	9.7	10.2	10.8	8.7	10.0	10.5	11.1	11.7	9.4	10.8	11.4	12.0	12.7	11.2	12.8								

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		16300					16000					15500					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
8000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9
	-10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	-5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	0	3.2	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.6	5.8	6.1	6.5
	5	2.8	3.2	3.4	3.6	3.8	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	10	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3
10000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9
	-10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	-5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	0	3.2	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.6	5.8	6.1	6.5
	5	2.8	3.2	3.4	3.6	3.8	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	10	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3
12000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9
	-10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	-5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	0	3.2	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.6	5.8	6.1	6.5
	5	2.8	3.2	3.4	3.6	3.8	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	10	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3
14000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9
	-10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	-5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	0	3.2	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.6	5.8	6.1	6.5
	5	2.8	3.2	3.4	3.6	3.8	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	10	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3
16000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.1	7.5	7.9
	-10	3.9	4.4	4.7	4.9	5.2	4.1	4.7	5.0	5.2	5.5	4.6	5.2	5.5	5.8	6.1	5.1	5.8	6.1	6.4	6.8	5.6	6.4	6.7	7.1	7.5
	-5	3.6	4.1	4.3	4.5	4.7	3.8	4.4	4.6	4.8	5.1	4.2	4.9	5.1	5.4	5.7	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	7.0
	0	3.2	3.7	3.9	4.1	4.3	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.2	5.5	5.8	4.8	5.6	5.8	6.1	6.5
	5	2.8	3.2	3.4	3.6	3.8	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.2	4.4	5.0	5.3	5.6	5.9
	10	2.4	2.8	2.9	3.1	3.2	2.6	3.0	3.2	3.4	3.5	3.0	3.5	3.7	3.9	4.1	3.5	4.0	4.2	4.4	4.6	3.9	4.5	4.7	5.0	5.3
18000	-35	5.3	6.1	6.4	6.8	7.1	5.6	6.5	6.8	7.1	7.5	6.2	7.1	7.4	7.8	8.2	6.7	7.7	8.1	8.5	9.0	7.3	8.4	8.8	9.3	9.8
	-30	5.0	5.8	6.1	6.4	6.7	5.3	6.1	6.4	6.8	7.1	5.8	6.7	7.0	7.4	7.8	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3
	-25	4.8	5.4	5.7	6.0	6.3	5.0	5.8	6.1	6.4	6.7	5.5	6.3	6.6	7.0	7.4	6.0	6.9	7.3	7.7	8.1	6.6	7.6	8.0	8.4	8.9
	-20	4.5	5.1	5.4	5.6	5.9	4.7	5.4	5.7	6.0	6.3	5.2	6.0	6.3	6.6	6.9	5.7	6.5	6.9	7.2	7.6	6.3	7.2	7.5	7.9	8.4
	-15	4.2	4.8	5.0	5.3	5.6	4.4	5.1	5.3	5.6	5.9	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.5	6.8	7.2	5.9				

SECOND SEGMENT TAKEOFF NET CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - V2SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		14000					13500					13000					12000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8	-35	7.9	9.1	9.6	10.1	10.7	8.6	9.9	10.4	11.0	11.6	9.4	10.8	11.3	11.9	12.6	11.1	12.7	13.4	14.1	14.9
0	-30	7.6	8.7	9.1	9.6	10.2	8.2	9.5	10.0	10.5	11.1	8.9	10.3	10.8	11.4	12.1	10.7	12.2	12.9	13.5	14.3
0	-25	7.2	8.3	8.7	9.2	9.7	7.9	9.0	9.5	10.0	10.6	8.6	9.8	10.4	10.9	11.5	10.2	11.7	12.3	13.0	13.7
0	-20	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.0	9.5	10.1	8.2	9.4	9.9	10.4	11.0	9.8	11.2	11.8	12.4	13.2
0	-15	6.5	7.5	7.8	8.3	8.7	7.1	8.2	8.6	9.1	9.6	7.8	9.0	9.4	9.9	10.5	9.3	10.7	11.3	11.9	12.6
0	-10	6.1	7.0	7.4	7.8	8.2	6.7	7.7	8.1	8.6	9.0	7.4	8.5	8.9	9.4	9.9	8.9	10.2	10.7	11.3	12.0
5	-5	5.8	6.6	6.9	7.3	7.7	6.4	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.9	9.4	8.4	9.7	10.2	10.8	11.4
0	0	5.4	6.2	6.5	6.8	7.2	5.9	6.8	7.2	7.6	8.0	6.6	7.5	7.9	8.4	8.8	8.0	9.2	9.6	10.2	10.7
5	5	4.9	5.6	5.9	6.2	6.6	5.4	6.2	6.6	6.9	7.3	6.0	6.9	7.3	7.7	8.1	7.4	8.5	9.0	9.4	10.0
10	10	4.4	5.1	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.6	5.5	6.3	6.7	7.0	7.4	6.8	7.9	8.3	8.7	9.2
15	15	3.9	4.5	4.7	4.9	5.2	4.4	5.0	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.6	6.2	7.1	7.5	7.9	8.3
20	20	3.3	3.8	4.0	4.3	4.5	3.8	4.4	4.6	4.9	5.1	4.3	5.0	5.3	5.5	5.9	5.5	6.4	6.7	7.1	7.5
25	25	2.8	3.2	3.4	3.6	3.8	3.2	3.7	3.9	4.2	4.4	3.7	4.3	4.6	4.8	5.1	4.9	5.6	5.9	6.3	6.6
30	30	2.2	2.6	2.7	2.9	3.0	2.7	3.1	3.3	3.4	3.6	3.1	3.6	3.8	4.1	4.3	4.2	4.9	5.2	5.4	5.8
35	35	1.7	2.0	2.1	2.2	2.3	2.1	2.5	2.6	2.7	2.9	2.6	3.0	3.1	3.3	3.5	3.6	4.2	4.4	4.6	4.9
38	38	1.3	1.5	1.6	1.7	1.8	1.7	2.0	2.1	2.2	2.4	2.1	2.5	2.6	2.8	3.0	3.1	3.7	3.9	4.1	4.3
9	-35	7.2	8.3	8.7	9.2	9.7	7.9	9.1	9.5	10.0	10.6	8.6	9.9	10.4	11.0	11.6	10.3	11.8	12.4	13.0	13.8
0	-30	6.9	7.9	8.3	8.8	9.2	7.5	8.7	9.1	9.6	10.1	8.2	9.5	9.9	10.5	11.1	9.8	11.3	11.9	12.5	13.2
0	-25	6.6	7.5	7.9	8.3	8.8	7.2	8.2	8.7	9.1	9.6	7.9	9.0	9.5	10.0	10.6	9.4	10.8	11.4	12.0	12.7
0	-20	6.2	7.1	7.5	7.9	8.3	6.8	7.8	8.2	8.7	9.2	7.5	8.6	9.0	9.5	10.1	9.0	10.3	10.9	11.4	12.1
0	-15	5.9	6.7	7.1	7.5	7.9	6.5	7.4	7.8	8.2	8.7	7.1	8.2	8.6	9.1	9.6	8.6	9.9	10.4	10.9	11.6
0	-10	5.5	6.3	6.7	7.0	7.4	6.1	7.0	7.4	7.7	8.2	6.7	7.7	8.1	8.6	9.0	8.2	9.4	9.9	10.4	11.0
5	-5	5.2	5.9	6.2	6.6	6.9	5.7	6.6	6.9	7.3	7.7	6.3	7.3	7.7	8.1	8.5	7.7	8.9	9.3	9.8	10.4
0	0	4.8	5.5	5.8	6.1	6.4	5.3	6.1	6.4	6.7	7.1	5.9	6.8	7.1	7.5	7.9	7.3	8.3	8.8	9.2	9.8
5	5	4.4	5.0	5.2	5.5	5.8	4.9	5.6	5.9	6.2	6.5	5.4	6.2	6.6	6.9	7.3	6.8	7.8	8.2	8.6	9.1
10	10	3.9	4.5	4.7	4.9	5.2	4.4	5.1	5.3	5.6	5.9	4.9	5.7	6.0	6.3	6.6	6.2	7.1	7.5	7.9	8.3
15	15	3.4	3.9	4.1	4.3	4.5	3.9	4.4	4.7	4.9	5.2	4.4	5.0	5.3	5.6	5.9	5.6	6.4	6.7	7.1	7.5
20	20	2.8	3.3	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.5	3.8	4.4	4.6	4.9	5.1	5.0	5.7	6.0	6.3	6.7
25	25	2.3	2.7	2.8	3.0	3.1	2.7	3.2	3.3	3.5	3.7	3.2	3.7	3.9	4.1	4.4	4.3	5.0	5.2	5.5	5.9
30	30	1.7	2.0	2.2	2.3	2.4	2.2	2.5	2.7	2.8	3.0	2.6	3.1	3.2	3.4	3.6	3.7	4.3	4.5	4.7	5.0
35	35	1.2	1.5	1.6	1.7	1.8	1.6	1.9	2.0	2.2	2.3	2.1	2.4	2.6	2.7	2.9	3.1	3.6	3.8	4.0	4.2
36	36	1.1	1.3	1.4	1.5	1.6	1.5	1.7	1.8	2.0	2.1	1.9	2.2	2.4	2.5	2.7	2.9	3.4	3.5	3.8	4.0
1	-35	6.6	7.5	7.9	8.3	8.8	7.2	8.3	8.7	9.1	9.7	7.9	9.0	9.5	10.0	10.6	9.4	10.8	11.4	12.0	12.7
0	-30	6.2	7.2	7.5	7.9	8.4	6.9	7.9	8.3	8.7	9.2	7.5	8.6	9.1	9.6	10.1	9.0	10.4	10.9	11.5	12.1
0	-25	5.9	6.8	7.1	7.5	7.9	6.5	7.5	7.9	8.3	8.7	7.2	8.2	8.6	9.1	9.6	8.6	9.9	10.4	11.0	11.6
0	-20	5.6	6.4	6.7	7.1	7.5	6.2	7.1	7.4	7.8	8.3	6.8	7.8	8.2	8.7	9.1	8.2	9.5	10.0	10.5	11.1
0	-15	5.3	6.0	6.3	6.7	7.0	5.8	6.7	7.0	7.4	7.8	6.5	7.4	7.8	8.2	8.7	7.9	9.0	9.5	10.0	10.6
0	-10	4.9	5.7	5.9	6.2	6.6	5.5	6.3	6.6	6.9	7.3	6.1	7.0	7.3	7.7	8.1	7.5	8.6	9.0	9.5	10.0
5	-5	4.6	5.3	5.5	5.8	6.1	5.1	5.9	6.2	6.5	6.9	5.7	6.6	6.9	7.2	7.6	7.0	8.1	8.5	9.0	9.5
0	0	4.2	4.8	5.1	5.4	5.6	4.7	5.4	5.7	6.0	6.3	5.3	6.1	6.4	6.7	7.1	6.6	7.6	8.0	8.4	8.9
5	5	3.9	4.4	4.6	4.9	5.1	4.4	5.0	5.3	5.5	5.8	4.9	5.6	5.9	6.2	6.6	6.1	7.1	7.4	7.8	8.3
10	10	3.4	3.9	4.1	4.3	4.5	3.9	4.4	4.7	4.9	5.2	4.4	5.0	5.3	5.6	5.9	5.6	6.4	6.7	7.1	7.5
15	15	2.9	3.3	3.5	3.7	3.9	3.3	3.8	4.0	4.3	4.5	3.8	4.4	4.6	4.9	5.2	5.0	5.7	6.0	6.4	6.7
20	20	2.3	2.7	2.9	3.0	3.2	2.8	3.2	3.4	3.6	3.8	3.3	3.8	4.0	4.2	4.4	4.4	5.1	5.3	5.6	5.9
25	25	1.8	2.1	2.2	2.4	2.5	2.2	2.6	2.8	2.9	3.1	2.7	3.1	3.3	3.5	3.7	3.8	4.4	4.6	4.8	5.1
30	30	1.3	1.5	1.6	1.7	1.8	1.7	2.0	2.1	2.3	2.4	2.2	2.5	2.7	2.8	3.0	3.2	3.7	3.9	4.1	4.3
34	34	.8	1.0	1.1	1.2	1.3	1.2	1.5	1.6	1.7	1.8	1.7	2.0	2.1	2.2	2.3	2.6	3.1	3.2	3.4	3.6

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2 FROM ABOVE CLIMB GRADIENTS.



Figure 4-32 (Sheet 6 of 6)

SINGLE ENGINE ENROUTE NET CLIMB GRADIENT - PERCENT
FLAPS - UPCONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VENTRSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - MAXIMUM CONTINUOUS THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																														
		16300						16000						15500						15000						14500						
		WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS						
		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30		
0		VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						
	-20	5.9	6.6	6.8	7.1	7.4	6.1	6.8	7.1	7.4	7.7	6.5	7.3	7.6	7.9	8.2	7.0	7.8	8.1	8.4	8.8	7.4	8.3	8.6	8.9	9.3	7.4	8.3	8.6	8.9	9.3	
	-15	5.9	6.6	6.8	7.1	7.4	6.1	6.8	7.1	7.4	7.7	6.5	7.3	7.6	7.9	8.2	7.0	7.8	8.1	8.4	8.8	7.4	8.3	8.6	8.9	9.3	7.4	8.3	8.6	8.9	9.3	
	-10	5.9	6.6	6.8	7.1	7.4	6.1	6.8	7.1	7.4	7.7	6.5	7.3	7.6	7.9	8.2	7.0	7.8	8.1	8.4	8.8	7.4	8.3	8.6	8.9	9.3	7.4	8.3	8.6	8.9	9.3	
	-5	5.9	6.6	6.9	7.1	7.4	6.1	6.9	7.1	7.4	7.7	6.6	7.3	7.6	7.9	8.2	7.0	7.8	8.1	8.4	8.8	7.5	8.3	8.6	9.0	9.3	7.5	8.3	8.6	9.0	9.3	
	0	5.9	6.6	6.9	7.2	7.5	6.2	6.9	7.2	7.4	7.8	6.6	7.3	7.6	7.9	8.3	7.0	7.8	8.1	8.4	8.8	7.5	8.3	8.7	9.0	9.4	7.5	8.3	8.7	9.0	9.4	
	5	5.9	6.6	6.8	7.1	7.4	6.2	6.9	7.1	7.4	7.7	6.6	7.3	7.6	7.9	8.2	7.0	7.8	8.1	8.4	8.7	7.5	8.3	8.6	8.9	9.3	7.5	8.3	8.6	8.9	9.3	
	10	5.7	6.3	6.6	6.8	7.1	5.9	6.6	6.8	7.1	7.4	6.3	7.0	7.3	7.6	7.9	6.7	7.5	7.8	8.1	8.4	7.2	8.0	8.3	8.6	9.0	7.2	8.0	8.3	8.6	9.0	
	15	5.4	6.1	6.3	6.5	6.8	5.7	6.3	6.6	6.8	7.1	6.1	6.7	7.0	7.3	7.6	6.5	7.2	7.5	7.8	8.1	6.9	7.7	8.0	8.3	8.6	6.9	7.7	8.0	8.3	8.6	
	20	4.9	5.4	5.6	5.8	6.1	5.1	5.6	5.9	6.1	6.3	5.4	6.1	6.3	6.5	6.8	5.8	6.5	6.7	7.0	7.3	6.3	7.0	7.2	7.5	7.8	6.3	7.0	7.2	7.5	7.8	
50	25	4.3	4.8	4.9	5.1	5.4	4.5	5.0	5.2	5.4	5.6	4.8	5.4	5.6	5.8	6.0	5.2	5.8	6.0	6.2	6.5	5.6	6.2	6.5	6.7	7.0	5.6	6.2	6.5	6.7	7.0	
	30	3.7	4.1	4.3	4.4	4.6	3.9	4.3	4.5	4.7	4.9	4.2	4.7	4.9	5.1	5.3	4.5	5.1	5.3	5.5	5.7	4.9	5.5	5.7	5.9	6.1	4.9	5.5	5.7	5.9	6.1	
	35	3.1	3.4	3.6	3.7	3.9	3.2	3.6	3.8	3.9	4.1	3.6	4.0	4.1	4.3	4.5	3.9	4.3	4.5	4.7	4.9	4.2	4.7	4.9	5.1	5.3	4.2	4.7	4.9	5.1	5.3	
	40	2.4	2.8	2.9	3.0	3.1	2.6	2.9	3.1	3.2	3.4	2.9	3.3	3.4	3.6	3.7	3.2	3.6	3.8	3.9	4.1	3.5	4.0	4.1	4.3	4.5	3.5	4.0	4.1	4.3	4.5	
	45	1.8	2.1	2.2	2.3	2.4	2.0	2.2	2.4	2.5	2.6	2.3	2.6	2.7	2.8	2.9	2.5	2.9	3.0	3.1	3.3	2.8	3.2	3.3	3.5	3.6	2.8	3.2	3.3	3.5	3.6	
	50	1.2	1.4	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.8	1.6	1.9	2.0	2.1	2.2	1.9	2.2	2.3	2.4	2.5	2.2	2.5	2.6	2.7	2.8	2.2	2.5	2.6	2.7	2.8	
	54	.7	.9	1.0	1.0	1.1	.9	1.1	1.1	1.2	1.3	1.1	1.3	1.4	1.5	1.6	1.4	1.6	1.7	1.8	1.9	1.6	1.9	2.0	2.1	2.2	1.6	1.9	2.0	2.1	2.2	
	5	VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						
	-30	6.5	7.2	7.5	7.8	8.1	6.8	7.5	7.8	8.1	8.4	7.2	8.0	8.3	8.6	8.9	7.7	8.5	8.8	9.1	9.5	8.1	9.0	9.3	9.7	10.1	8.1	9.0	9.3	9.7	10.1	
	100	-25	6.5	7.2	7.4	7.7	8.0	6.7	7.5	7.7	8.0	8.3	7.2	7.9	8.2	8.5	8.9	7.6	8.4	8.7	9.1	9.4	8.1	9.0	9.3	9.6	10.0	8.1	9.0	9.3	9.6	10.0
-20		6.4	7.1	7.4	7.7	8.0	6.7	7.4	7.7	8.0	8.3	7.1	7.9	8.2	8.5	8.8	7.6	8.4	8.7	9.0	9.3	8.0	8.9	9.2	9.5	9.9	8.0	8.9	9.2	9.5	9.9	
-15		6.2	6.9	7.2	7.4	7.7	6.5	7.2	7.4	7.7	8.0	6.9	7.6	7.9	8.2	8.5	7.4	8.1	8.4	8.7	9.1	7.8	8.6	8.9	9.3	9.6	7.8	8.6	8.9	9.3	9.6	
-10		5.8	6.5	6.7	6.9	7.2	6.1	6.7	7.0	7.2	7.5	6.5	7.2	7.4	7.7	8.0	6.9	7.6	7.9	8.2	8.5	7.4	8.1	8.4	8.7	9.0	7.9	8.6	8.9	9.3	9.6	
-5		5.4	6.0	6.2	6.4	6.7	5.6	6.2	6.4	6.7	6.9	6.0	6.6	6.9	7.1	7.4	6.4	7.1	7.3	7.6	7.9	6.9	7.6	7.8	8.1	8.4	7.9	8.6	8.9	9.3	9.6	
0		4.8	5.3	5.5	5.7	5.9	5.0	5.5	5.7	6.0	6.2	5.4	6.0	6.2	6.4	6.6	5.8	6.4	6.6	6.9	7.1	6.2	6.8	7.1	7.3	7.6	6.2	6.8	7.1	7.3	7.6	
5		4.2	4.7	4.8	5.0	5.2	4.4	4.9	5.1	5.3	5.5	4.8	5.3	5.5	5.7	5.9	5.1	5.7	5.9	6.1	6.3	5.5	6.1	6.3	6.6	6.8	5.5	6.1	6.3	6.6	6.8	
10		3.6	4.1	4.2	4.4	4.5	3.8	4.3	4.4	4.6	4.8	4.2	4.6	4.8	5.0	5.2	4.5	5.0	5.2	5.4	5.6	4.9	5.4	5.6	5.8	6.1	4.9	5.4	5.6	5.8	6.1	
15		3.1	3.5	3.6	3.7	3.9	3.3	3.7	3.8	3.9	4.1	3.6	4.0	4.1	4.3	4.5	3.9	4.4	4.5	4.7	4.9	4.3	4.7	4.9	5.1	5.3	4.3	4.7	4.9	5.1	5.3	
20		2.6	2.9	3.0	3.1	3.3	2.8	3.1	3.2	3.3	3.5	3.1	3.4	3.6	3.7	3.8	3.4	3.8	3.9	4.1	4.2	3.7	4.1	4.3	4.4	4.6	3.7	4.1	4.3	4.4	4.6	
150	25	2.1	2.4	2.5	2.6	2.7	2.3	2.5	2.7	2.8	2.9	2.6	2.9	3.0	3.1	3.2	2.9	3.2	3.3	3.4	3.6	3.2	3.5	3.7	3.8	4.0	3.2	3.5	3.7	3.8	4.0	
	30	1.6	1.8	1.9	2.0	2.1	1.7	2.0	2.1	2.2	2.3	2.0	2.3	2.4	2.5	2.6	2.3	2.6	2.7	2.8	2.9	2.6	2.9	3.0	3.1	3.3	2.6	2.9	3.0	3.1	3.3	
	35	1.1	1.2	1.3	1.4	1.5	1.2	1.4	1.5	1.6	1.6	1.5	1.7	1.8	1.8	1.9	1.7	2.0	2.1	2.1	2.2	2.0	2.3	2.4	2.5	2.6	2.0	2.3	2.4	2.5	2.6	
	40	.5	.7	.7	.8	.8	.7	.8	.9	.9	1.0	.9	1.1	1.1	1.2	1.3	1.2	1.4	1.4	1.5	1.6	1.4	1.6	1.7	1.8	1.9	1.4	1.6	1.7	1.8	1.9	
	44	.1	.2	.2	.3	.3	.2	.3	.4	.4	.4	.4	.6	.6	.7	.7	.7	.8	.9	.9	1.0	.9	1.1	1.1	1.2	1.3	.9	1.1	1.1	1.2	1.3	
	1	VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						VENR=160 KIAS						
	-40	5.7	6.3	6.5	6.8	7.0	6.0	6.6	6.8	7.1	7.3	6.4	7.0	7.3	7.5	7.8	6.8	7.5	7.7	8.0	8.3	7.3	8.0	8.3	8.5	8.9	7.3	8.0	8.3	8.5	8.9	
	200	-35	5.4	6.0	6.2	6.4	6.6	5.6	6.2	6.4	6.7	6.9	6.0	6.7	6.9	7.1	7.4	6.5	7.1	7.4	7.6	7.9	6.9	7.6	7.9	8.1	8.4	6.9	7.6	7.9	8.1	8.4
		-30	5.1	5.6	5.8	6.0	6.2	5.3	5.8	6.1	6.3	6.5	5.7	6.3	6.5	6.7	7.0	6.1	6.7	6.9	7.2	7.4	6.5	7.2	7.4	7.7	8.0	6.5	7.2	7.4	7.7	8.0
		-25	4.7	5.2	5.4	5.6	5.8	4.9	5.4	5.6	5.8	6.0	5.3	5.8	6.0	6.3	6.5	5.7	6.3	6.5	6.7	7.0	6.1	6.7	6.9	7.2	7.4	6.1	6.7	6.9	7.2	7.4
-20		4.3	4.8	4.9	5.1	5.3	4.5	5.0	5.2	5.3	5.5	4.9	5.4	5.6	5.7	6.0	5.2	5.8	6.0	6.2	6.4	5.6	6.2	6.4	6.6	6.9	5.6	6.2	6.4	6.6	6.9	
-15		3.9	4.3	4.4	4.6	4.8	4.1	4.5	4.7	4.8	5.0	4.4	4.9	5.0	5.2	5.4	4.8	5.3	5.4	5.6	5.8	5.2	5.7	5.9	6.1	6.3	5.2	5.7	5.9	6.1	6.3	
-10		3.4	3.7	3.9	4.0	4.2	3.6	3.9	4.1	4.2	4.4	3.9	4.3	4.5	4.6	4.8	4.2	4.7	4.8	5.0	5.2	4.6	5.1	5.2	5.4	5.6	4.6	5.1	5.2	5.4	5.6	
-5		2.9	3.2	3.3	3.4	3.6	3.1	3.4	3.5	3.7	3.8	3.4	3.7	3.9	4.0	4.2	3.7	4.1	4.2	4.4	4.6	4.0	4.5	4.6	4.8	5.0	4.0	4.5	4.6	4.8	5.0	
0		2.4	2.7	2.8	2.9	3.0	2.6	2.9	3.0	3.1	3.2	2.9	3.2	3.3	3.4	3.6	3.2	3.5	3.7	3.8	3.9	3.5	3.9	4.0	4.2	4.3	3.5	3.9	4.0	4.2	4.3	
5		1.9	2.2	2.3	2.4	2.5	2.1	2.3	2.4	2.5	2.6	2.4	2.7	2.8	2.9	3.0	2.7	3.0	3.1	3.2	3.3	3.0	3.3	3.4	3.5	3.7	3.0	3.3	3.4	3.5	3.7	
10		1.5	1.7	1.8	1.9	1.9	1.6	1.9	1.9	2.0	2.1	1.9	2.2	2.2	2.3	2.4	2.2	2.5	2.6	2.7	2.8	2.5	2.8	2.9	3.0	3.1	2.5	2.8	2.9	3.0	3.1	
15	1.1	1.2	1.3	1.4	1.4	1.2	1.4	1.5	1.5	1.6	1.5	1.7	1.7	1.8	1.9	1.7	2.0	2.0	2.1	2.2	2.0	2.3	2.3	2.4	2.5	2.0	2.3	2.3	2.4	2.5		
250	20	.6	.8	.8	.9	.9	.8	.9	1.0	1.0	1.1	1.0	1.2	1.3	1.3	1.4	1.3	1.5	1.5	1.6	1.7	1.5	1.7	1.8	1.9	2.0	1.5	1.7	1.8	1.9	2.0	
	25	.2	.3	.4	.4	.5	.4	.5	.5	.6	.6	.6	.7	.8	.8	.9	.8	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.4	1.4	1.1	1.2	1.3	1.4	1.4	
	30	-.2	-.1	-.1	-.1	-.1.																										

SINGLE ENGINE ENROUTE NET CLIMB GRADIENT - PERCENT FLAPS - UP

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VENR

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - MAXIMUM CONTINUOUS THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		14000					13500					13000					12000					11000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0		VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-20	7.9	8.8	9.2	9.5	9.9	8.4	9.4	9.7	10.1	10.6	9.0	10.0	10.4	10.8	11.2	10.2	11.3	11.8	12.2	12.7	11.6	12.9	13.4	13.9	14.5
	-15	7.9	8.8	9.2	9.5	9.9	8.4	9.4	9.7	10.1	10.5	9.0	10.0	10.4	10.8	11.2	10.2	11.3	11.8	12.2	12.7	11.6	12.9	13.4	13.9	14.4
	-10	7.9	8.8	9.2	9.5	9.9	8.4	9.4	9.7	10.1	10.5	9.0	10.0	10.4	10.8	11.2	10.2	11.3	11.8	12.2	12.7	11.6	12.9	13.4	13.9	14.4
	-5	7.9	8.8	9.2	9.5	9.9	8.5	9.4	9.8	10.1	10.5	9.0	10.0	10.4	10.8	11.2	10.2	11.4	11.8	12.2	12.7	11.7	12.9	13.4	13.9	14.5
	0	8.0	8.9	9.2	9.6	9.9	8.5	9.4	9.8	10.2	10.6	9.1	10.0	10.4	10.8	11.3	10.3	11.4	11.8	12.3	12.8	11.7	13.0	13.4	13.9	14.5
	5	8.0	8.8	9.2	9.5	9.9	8.5	9.4	9.7	10.1	10.5	9.0	10.0	10.4	10.8	11.2	10.2	11.3	11.8	12.2	12.7	11.7	12.9	13.4	13.9	14.4
	10	7.7	8.5	8.8	9.2	9.5	8.2	9.1	9.4	9.8	10.1	8.7	9.7	10.0	10.4	10.8	9.9	11.0	11.4	11.8	12.3	11.3	12.5	13.0	13.4	14.0
	15	7.4	8.2	8.5	8.8	9.2	7.9	8.7	9.1	9.4	9.8	8.4	9.3	9.7	10.0	10.4	9.6	10.6	11.0	11.4	11.8	11.0	12.1	12.5	13.0	13.5
	20	6.7	7.4	7.7	8.0	8.3	7.2	8.0	8.2	8.6	8.9	7.7	8.5	8.8	9.1	9.5	8.8	9.7	10.1	10.4	10.8	10.1	11.1	11.5	11.9	12.4
	25	6.0	6.7	6.9	7.2	7.5	6.5	7.2	7.4	7.7	8.0	6.9	7.7	8.0	8.3	8.6	8.0	8.8	9.1	9.5	9.8	9.2	10.1	10.5	10.9	11.3
	30	5.3	5.9	6.1	6.4	6.6	5.7	6.4	6.6	6.9	7.1	6.2	6.8	7.1	7.4	7.7	7.2	7.9	8.2	8.5	8.8	8.3	9.1	9.5	9.8	10.2
	35	4.6	5.1	5.3	5.5	5.8	5.0	5.6	5.8	6.0	6.2	5.4	6.0	6.2	6.5	6.7	6.3	7.0	7.3	7.5	7.8	7.4	8.2	8.4	8.8	9.1
	40	3.9	4.3	4.5	4.7	4.9	4.3	4.7	4.9	5.1	5.3	4.6	5.2	5.4	5.6	5.8	5.5	6.1	6.3	6.6	6.8	6.5	7.1	7.4	7.7	8.0
	45	3.2	3.5	3.7	3.8	4.0	3.5	3.9	4.1	4.2	4.4	3.9	4.3	4.5	4.6	4.8	4.6	5.2	5.3	5.6	5.8	5.5	6.1	6.3	6.6	6.8
	50	2.5	2.8	2.9	3.0	3.2	2.8	3.1	3.3	3.4	3.5	3.1	3.5	3.6	3.8	3.9	3.8	4.3	4.4	4.6	4.8	4.6	5.2	5.3	5.6	5.8
	54	1.9	2.2	2.3	2.4	2.5	2.2	2.5	2.6	2.7	2.8	2.5	2.8	3.0	3.1	3.2	3.2	3.6	3.7	3.8	4.0	3.9	4.4	4.5	4.7	4.9
50		VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-30	8.7	9.6	9.9	10.3	10.7	9.2	10.2	10.5	10.9	11.3	9.8	10.8	11.2	11.6	12.1	11.1	12.2	12.7	13.1	13.6	12.6	13.9	14.4	14.9	15.4
	-25	8.6	9.5	9.9	10.2	10.6	9.1	10.1	10.5	10.9	11.3	9.7	10.7	11.1	11.5	12.0	11.0	12.1	12.6	13.0	13.5	12.5	13.8	14.3	14.8	15.3
	-20	8.6	9.4	9.8	10.1	10.5	9.1	10.0	10.4	10.8	11.2	9.7	10.7	11.0	11.4	11.9	11.0	12.1	12.5	12.9	13.4	12.4	13.7	14.2	14.7	15.2
	-15	8.3	9.2	9.5	9.9	10.2	8.9	9.8	10.1	10.5	10.9	9.4	10.4	10.8	11.1	11.6	10.7	11.8	12.2	12.6	13.1	12.2	13.4	13.8	14.3	14.8
	-10	7.8	8.7	9.0	9.3	9.6	8.4	9.2	9.5	9.9	10.2	8.9	9.8	10.2	10.5	10.9	10.1	11.1	11.5	11.9	12.4	11.5	12.7	13.1	13.6	14.1
	-5	7.3	8.1	8.4	8.7	9.0	7.8	8.6	8.9	9.2	9.6	8.3	9.2	9.5	9.9	10.2	9.5	10.5	10.8	11.2	11.6	10.9	11.9	12.3	12.8	13.2
	0	6.6	7.3	7.6	7.9	8.1	7.1	7.8	8.1	8.4	8.7	7.6	8.4	8.7	9.0	9.3	8.7	9.6	9.9	10.3	10.6	10.0	11.0	11.3	11.7	12.1
	5	5.9	6.6	6.8	7.0	7.3	6.4	7.0	7.3	7.6	7.8	6.9	7.6	7.8	8.1	8.4	7.9	8.7	9.0	9.3	9.6	9.1	10.0	10.3	10.7	11.1
	10	5.3	5.9	6.1	6.3	6.5	5.7	6.3	6.5	6.8	7.0	6.2	6.8	7.0	7.3	7.5	7.1	7.9	8.1	8.4	8.7	8.3	9.1	9.4	9.7	10.1
	15	4.7	5.1	5.3	5.5	5.7	5.0	5.6	5.8	6.0	6.2	5.5	6.0	6.2	6.5	6.7	6.4	7.0	7.3	7.5	7.8	7.4	8.2	8.4	8.7	9.1
	20	4.1	4.5	4.7	4.8	5.0	4.4	4.9	5.1	5.3	5.5	4.8	5.3	5.5	5.7	5.9	5.7	6.3	6.5	6.7	7.0	6.7	7.4	7.6	7.9	8.1
	25	3.5	3.9	4.0	4.2	4.4	3.8	4.3	4.4	4.6	4.8	4.2	4.7	4.8	5.0	5.2	5.0	5.6	5.7	5.9	6.2	6.0	6.6	6.8	7.0	7.3
	30	2.9	3.2	3.4	3.5	3.6	3.2	3.6	3.7	3.9	4.0	3.6	4.0	4.1	4.3	4.4	4.3	4.8	5.0	5.1	5.3	5.2	5.7	5.9	6.1	6.4
	35	2.3	2.6	2.7	2.8	2.9	2.6	2.9	3.0	3.1	3.3	2.9	3.3	3.4	3.5	3.7	3.6	4.0	4.2	4.3	4.5	4.4	4.9	5.1	5.2	5.4
	40	1.7	1.9	2.0	2.1	2.2	2.0	2.2	2.3	2.4	2.5	2.3	2.5	2.7	2.8	2.9	2.9	3.2	3.4	3.5	3.6	3.6	4.0	4.2	4.3	4.5
	44	1.1	1.3	1.4	1.5	1.6	1.4	1.6	1.7	1.8	1.9	1.7	1.9	2.0	2.1	2.2	2.3	2.6	2.7	2.8	2.9	3.0	3.3	3.4	3.5	3.7
100		VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-40	7.7	8.5	8.8	9.1	9.4	8.2	9.1	9.4	9.7	10.0	8.8	9.7	10.0	10.3	10.7	10.0	11.0	11.3	11.7	12.1	11.4	12.5	12.9	13.3	13.8
	-35	7.4	8.1	8.4	8.7	9.0	7.9	8.6	8.9	9.2	9.6	8.4	9.2	9.5	9.8	10.2	9.6	10.5	10.8	11.2	11.6	10.9	12.0	12.4	12.8	13.2
	-30	7.0	7.7	7.9	8.2	8.5	7.5	8.2	8.5	8.8	9.1	8.0	8.7	9.0	9.3	9.7	9.1	10.0	10.3	10.7	11.0	10.4	11.4	11.8	12.2	12.6
	-25	6.5	7.2	7.4	7.7	8.0	7.0	7.7	8.0	8.2	8.5	7.5	8.2	8.5	8.8	9.1	8.6	9.4	9.7	10.1	10.4	9.9	10.8	11.1	11.5	11.9
	-20	6.1	6.7	6.9	7.1	7.4	6.5	7.1	7.4	7.6	7.9	7.0	7.7	7.9	8.2	8.5	8.0	8.8	9.1	9.4	9.7	9.2	10.1	10.4	10.8	11.1
	-15	5.6	6.1	6.3	6.5	6.8	6.0	6.6	6.8	7.0	7.3	6.4	7.1	7.3	7.6	7.8	7.4	8.2	8.4	8.7	9.0	8.6	9.4	9.7	10.0	10.4
	-10	5.0	5.5	5.7	5.9	6.1	5.4	5.9	6.1	6.3	6.6	5.8	6.4	6.6	6.8	7.1	6.8	7.4	7.7	7.9	8.2	7.9	8.6	8.9	9.2	9.5
	-5	4.4	4.9	5.0	5.2	5.4	4.8	5.3	5.4	5.6	5.8	5.2	5.7	5.9	6.1	6.3	6.1	6.7	6.9	7.1	7.4	7.1	7.8	8.0	8.3	8.6
	0	3.9	4.3	4.4	4.6	4.7	4.2	4.6	4.8	5.0	5.2	4.6	5.1	5.2	5.4	5.6	5.4	6.0	6.2	6.4	6.6	6.4	7.0	7.2	7.5	7.7
	5	3.3	3.7	3.8	3.9	4.1	3.6	4.0	4.2	4.3	4.5	4.0	4.4	4.6	4.7	4.9	4.8	5.3	5.4	5.6	5.8	5.7	6.3	6.5	6.7	6.9
	10	2.8	3.1	3.2	3.3	3.5	3.1	3.5	3.6	3.7	3.8	3.5	3.8	4.0	4.1	4.2	4.2	4.6	4.8	4.9	5.1	5.1	5.5	5.7	5.9	6.1
	15	2.3	2.6	2.7	2.8	2.9	2.6	2.9	3.0	3.1	3.2	2.9	3.2	3.4	3.5	3.6	3.6	4.0	4.1	4.3	4.4	4.4	4.9	5.0	5.2	5.4
	20	1.8	2.0	2.1	2.2	2.3	2.1	2.3	2.4	2.5	2.6	2.4	2.7	2.8	2.9	3.0	3.1	3.4	3.5	3.6	3.8	3.8	4.2	4.3	4.5	4.6
	25	1.3	1.5	1.6	1.7	1.7	1.6	1.8	1.9	2.0	2.0	1.9	2.1	2.2	2.3	2.4	2.5	2.8	2.9	3.0	3.1	3.2	3.5	3.6	3.8	3.9
	30	.8	1.0	1.0	1.1	1.2	1.1	1.3	1.3	1.4	1.4	1.3	1.5	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.4	2.6	2.8	2.9	3.1	3.2
	34	.4	.5	.5	.6	.6	.6	.7	.8	.8	.9	.9	1.0	1.1	1.1	1.2	1.4	1.6	1.6	1.7	1.8	2.0	2.2	2.3	2.4	2.5
150		VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-50	5.3	5.8	6.0	6.2	6.4	5.7	6.3	6.5	6.7	6.9	6.2	6.8	7.0	7.2	7.5	7.1	7.8	8.1	8.3	8.6	8.3	9.0	9.3	9.6	9.9
	-45	5.1	5.5	5.7	5.9	6.1	5.5	6.0	6.2	6.4	6.6	5.9	6.5	6.7	6.9	7.1	6.8	7.5	7.7	8.0	8.2	7.9	8.7	8.9	9.2	9.5
	-40	4.8	5.3	5.4	5.6	5.8	5.2	5.7	5.9	6.1	6.3	5.6	6.1	6.3	6.5	6.8	6.5	7.1	7.4	7.6	7.9	7.6	8.3	8.5	8.8	9.1
	-35	4.5	4.9	5.1	5.3	5.4	4.9	5.3	5.5	5.7	5.9	5.3	5.8	6.0	6.2	6.4	6.2	6.8	7.0	7.2	7.4	7.2	7.9	8.1	8.4	8.6
	-30	4.1	4.5	4.7	4.9	5.0	4.5	4.9	5.1	5.3	5.5</															

SINGLE ENGINE ENROUTE NET CLIMB GRADIENT - PERCENT
FLAPS - UPCONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VENRSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - MAXIMUM CONTINUOUS THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		16300					16000					15500					15000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
2000	-54	VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-50	1.6	1.8	1.9	2.0	2.1	1.8	2.0	2.1	2.2	2.2	2.1	2.3	2.4	2.5	2.6	2.3	2.6	2.7	2.8	2.9
	-45	1.5	1.7	1.7	1.8	1.9	1.6	1.8	1.9	2.0	2.1	1.9	2.1	2.2	2.3	2.4	2.2	2.4	2.5	2.6	2.7
	-40	1.3	1.5	1.5	1.6	1.7	1.4	1.6	1.7	1.8	1.8	1.7	1.9	2.0	2.0	2.1	2.0	2.2	2.3	2.3	2.4
	-35	1.1	1.2	1.3	1.4	1.4	1.2	1.4	1.5	1.5	1.6	1.5	1.7	1.7	1.8	1.9	1.8	2.0	2.0	2.1	2.2
	-30	.9	1.0	1.1	1.1	1.2	1.0	1.2	1.2	1.3	1.4	1.3	1.4	1.5	1.6	1.6	1.5	1.7	1.8	1.9	1.9
	-25	.6	.7	.8	.8	.9	.8	.9	.9	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.2	1.4	1.5	1.5	1.6
	-20	.4	.5	.5	.5	.6	.5	.6	.6	.7	.7	.7	.8	.9	.9	1.0	1.0	1.1	1.1	1.2	1.3
	-15	.0	.1	.2	.2	.2	.2	.3	.3	.3	.4	.4	.5	.5	.6	.6	.6	.7	.8	.8	.9
	-10	-.3	-.2	-.2	-.2	-.1	-.1	-.1	.0	.0	.0	.1	.2	.2	.2	.2	.3	.4	.4	.5	.5
	-5	-.6	-.5	-.5	-.5	-.5	-.5	-.4	-.4	-.4	-.4	-.3	-.2	-.2	-.2	-.1	-.1	.0	.0	.1	.1
	0	-.9	-.9	-.9	-.9	-.9	-.8	-.8	-.8	-.8	-.7	-.6	-.6	-.6	-.5	-.5	-.4	-.4	-.3	-.3	-.3
	5	-1.2	-1.2	-1.2	-1.2	-1.2	-1.1	-1.1	-1.1	-1.1	-1.1	-.9	-.9	-.9	-.9	-.9	-.7	-.7	-.7	-.7	-.7
3000	-54	VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-50	-1.5	-1.5	-1.6	-1.6	-1.6	-1.4	-1.4	-1.4	-1.5	-1.5	-1.2	-1.3	-1.3	-1.3	-1.3	-1.1	-1.1	-1.1	-1.1	-1.1
	-45	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.8	-1.8	-1.8	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.4	-1.4	-1.4	-1.4	-1.4
	-40	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-35	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-30	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-25	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-20	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-15	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-10	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	-5	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	0	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	5	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
4000	-54	VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-50	-.2	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	.1	.1	.2	.2	.3	.3	.3	.4	.5	.5	.5
	-45	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.1	-.1	-.1	.0	.1	.1	.1	.1	.2	.3	.3	.3	.4
	-40	-.5	-.5	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.1	.0	.1	.1	.2	.2
	-35	-.7	-.6	-.6	-.6	-.6	-.6	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.2	-.1	-.1	-.1	.0
	-30	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.7	-.7	-.7	-.5	-.5	-.5	-.5	-.5	-.3	-.3	-.3	-.3	-.2
	-25	-1.1	-1.1	-1.1	-1.1	-1.1	-1.0	-.9	-.9	-.9	-.9	-.8	-.8	-.7	-.7	-.7	-.6	-.6	-.5	-.5	-.5
	-20	-1.3	-1.3	-1.3	-1.3	-1.3	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.8	-.8	-.8	-.8	-.8
	-15	-1.5	-1.6	-1.6	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5	-1.5	-1.3	-1.3	-1.3	-1.3	-1.3	-1.1	-1.1	-1.1	-1.1	-1.1
	-10	-1.8	-1.8	-1.9	-1.9	-1.9	-1.7	-1.7	-1.8	-1.8	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.4	-1.4	-1.4	-1.4	-1.4
	-5	-2.1	-2.1	-2.2	-2.2	-2.2	-2.0	-2.0	-2.1	-2.1	-2.1	-1.8	-1.9	-1.9	-1.9	-1.9	-1.7	-1.7	-1.7	-1.7	-1.8
	0	-2.3	-2.4	-2.4	-2.4	-2.5	-2.2	-2.3	-2.3	-2.3	-2.4	-2.1	-2.1	-2.2	-2.2	-2.2	-1.9	-2.0	-2.0	-2.0	-2.1
	5	-2.6	-2.7	-2.7	-2.7	-2.8	-2.5	-2.6	-2.6	-2.6	-2.7	-2.4	-2.4	-2.5	-2.5	-2.5	-2.2	-2.3	-2.3	-2.3	-2.4
5000	-54	VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS					VENR=160 KIAS				
	-50	-2.8	-2.9	-2.9	-3.0	-3.0	-2.7	-2.8	-2.9	-2.9	-2.9	-2.6	-2.7	-2.7	-2.7	-2.8	-2.5	-2.5	-2.6	-2.6	-2.6
	-45	-3.0	-3.1	-3.1	-3.2	-3.2	-2.9	-3.0	-3.0	-3.0	-3.0	-2.8	-2.9	-2.9	-2.9	-2.9	-2.7	-2.8	-2.8	-2.8	-2.9
	-40	-3.1	-3.2	-3.2	-3.3	-3.3	-3.1	-3.2	-3.2	-3.2	-3.3	-3.0	-3.1	-3.1	-3.1	-3.2	-2.8	-2.9	-3.0	-3.0	-3.0
	-35	-3.3	-3.4	-3.4	-3.5	-3.5	-3.2	-3.3	-3.3	-3.3	-3.4	-3.1	-3.2	-3.2	-3.3	-3.3	-3.0	-3.1	-3.1	-3.1	-3.2
	-30	-3.4	-3.5	-3.5	-3.6	-3.6	-3.3	-3.4	-3.4	-3.4	-3.5	-3.2	-3.3	-3.3	-3.4	-3.4	-3.1	-3.2	-3.2	-3.2	-3.3
	-25	-3.6	-3.7	-3.7	-3.8	-3.8	-3.5	-3.6	-3.6	-3.7	-3.8	-3.4	-3.5	-3.5	-3.6	-3.6	-3.3	-3.4	-3.4	-3.4	-3.5
	-20	-3.7	-3.9	-3.9	-3.9	-4.0	-3.7	-3.8	-3.8	-3.9	-3.9	-3.6	-3.7	-3.7	-3.8	-3.8	-3.5	-3.6	-3.6	-3.7	-3.7
	-15	-3.9	-4.0	-4.1	-4.1	-4.2	-3.8	-4.0	-4.0	-4.1	-4.1	-3.8	-3.9	-3.9	-4.0	-4.0	-3.7	-3.8	-3.8	-3.9	-3.9
	-10	-4.1	-4.2	-4.2	-4.3	-4.3	-4.0	-4.2	-4.2	-4.3	-4.3	-4.0	-4.1	-4.1	-4.2	-4.2	-3.9	-4.0	-4.0	-4.1	-4.1
	-5	-4.3	-4.4	-4.4	-4.5	-4.5	-4.2	-4.4	-4.4	-4.5	-4.5	-4.2	-4.3	-4.3	-4.4	-4.4	-4.1	-4.2	-4.2	-4.3	-4.3
	0	-4.5	-4.6	-4.6	-4.7	-4.7	-4.4	-4.6	-4.6	-4.7	-4.7	-4.4	-4.5	-4.5	-4.6	-4.6	-4.3	-4.4	-4.4	-4.5	-4.5
	5	-4.7	-4.8	-4.8	-4.9	-4.9	-4.6	-4.8	-4.8	-4.9	-4.9	-4.6	-4.7	-4.7	-4.8	-4.8	-4.5	-4.6	-4.6	-4.7	-4.7

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2.5 FROM ABOVE CLIMB GRADIENTS.



Figure 4-33 (Sheet 3 of 4)

CONDITIONS: ANTI-ICE SYSTEMS - OFF * SPEEDBRAKES - RETRACT
LANDING GEAR - UP INOPERATIVE ENGINE - WINDMILLING
AIRSPEED - VNR OPERATIVE ENGINE - MAXIMUM CONTINUOUS THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		14000					13500					13000					12000					11000									
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS									
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30					
VENR=160 KIAS																															
2000	-54	2.9	3.2	3.4	3.5	3.6	3.3	3.6	3.7	3.8	4.0	3.6	4.0	4.1	4.2	4.4	4.4	4.6	4.9	5.1	5.3	5.2	5.7	5.9	6.1	6.3					
	-50	2.8	3.0	3.2	3.3	3.4	3.1	3.4	3.5	3.6	3.7	3.4	3.8	3.9	4.0	4.1	4.2	4.6	4.7	4.8	5.0	5.0	5.5	5.6	5.8	6.0					
	-45	2.5	2.8	2.9	3.0	3.1	2.9	3.1	3.2	3.4	3.5	3.2	3.5	3.6	3.7	3.9	3.9	4.3	4.4	4.5	4.7	4.7	5.2	5.3	5.5	5.6					
	-40	2.3	2.6	2.7	2.7	2.8	2.6	2.9	3.0	3.1	3.2	2.9	3.2	3.3	3.5	3.6	3.6	4.0	4.1	4.2	4.4	4.4	4.8	5.0	5.1	5.3					
	-35	2.1	2.3	2.4	2.5	2.6	2.4	2.6	2.7	2.8	2.9	2.7	3.0	3.1	3.2	3.3	3.4	3.7	3.8	3.9	4.1	4.1	4.5	4.7	4.8	4.9					
	-30	1.8	2.0	2.0	2.1	2.2	2.1	2.3	2.4	2.4	2.5	2.4	2.6	2.7	2.8	2.9	3.0	3.3	3.4	3.5	3.6	3.8	4.1	4.2	4.3	4.5					
	-25	1.5	1.6	1.7	1.8	1.8	1.7	1.9	2.0	2.1	2.2	2.0	2.2	2.3	2.4	2.5	2.6	2.9	3.0	3.1	3.2	3.4	3.7	3.8	3.9	4.0					
	-20	1.1	1.3	1.3	1.4	1.4	1.4	1.5	1.6	1.7	1.7	1.6	1.8	1.9	2.0	2.0	2.2	2.5	2.6	2.6	2.7	2.9	3.2	3.3	3.4	3.5					
	-15	.8	.9	.9	1.0	1.0	1.0	1.1	1.2	1.3	1.3	1.3	1.4	1.5	1.5	1.6	1.8	2.0	2.1	2.2	2.2	2.5	2.7	2.8	2.9	3.0					
	-10	.4	.5	.5	.6	.6	.6	.7	.8	.8	.9	.9	1.0	1.0	1.1	1.1	1.4	1.6	1.6	1.7	1.8	2.0	2.2	2.3	2.3	2.4					
	-5	.0	.1	.1	.1	.2	.2	.3	.4	.4	.4	.5	.6	.6	.6	.7	1.0	1.1	1.1	1.2	1.2	1.5	1.7	1.7	1.8	1.9					
	0	-.4	-.3	-.3	-.3	-.3	-.1	-.1	-.1	.0	.0	.1	.1	.2	.2	.2	.5	.6	.7	.7	.8	1.0	1.2	1.2	1.3	1.3					
	5	-.7	-.7	-.7	-.7	-.7	-.5	-.5	-.5	-.4	-.4	-.3	-.3	-.2	-.2	-.2	.1	.2	.2	.3	.3	.6	.7	.7	.8	.8					
	10	-1.1	-1.1	-1.1	-1.0	-1.0	-.9	-.9	-.9	-.8	-.8	-.7	-.7	-.6	-.6	-.6	-.3	-.2	-.2	-.2	-.2	.2	.2	.3	.3	.3					
14	-1.4	-1.4	-1.4	-1.4	-1.4	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.6	-.6	-.6	-.6	-.6	-.2	-.2	-.2	-.1	-.1						
VENR=160 KIAS																															
2500	-54	.8	.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.3	1.5	1.5	1.6	1.7	1.9	2.1	2.1	2.2	2.3	2.5	2.8	2.8	2.9	3.0					
	-50	.7	.8	.8	.9	.9	.9	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.7	1.9	2.0	2.0	2.1	2.3	2.6	2.6	2.7	2.8					
	-45	.5	.6	.6	.6	.7	.7	.8	.9	.9	1.0	1.0	1.1	1.1	1.2	1.2	1.5	1.7	1.7	1.8	1.8	2.1	2.3	2.4	2.4	2.5					
	-40	.3	.4	.4	.4	.5	.5	.6	.6	.7	.7	.7	.9	.9	.9	1.0	1.3	1.4	1.5	1.5	1.6	1.8	2.0	2.1	2.2	2.2					
	-35	.1	.1	.2	.2	.2	.3	.4	.4	.5	.5	.5	.6	.7	.7	.7	1.0	1.2	1.2	1.3	1.3	1.6	1.8	1.8	1.9	2.0					
	-30	-2	-1	-1	-1	-1	.0	.1	.1	.1	.1	.2	.2	.3	.4	.4	.7	.8	.9	.9	1.0	1.3	1.4	1.5	1.5	1.6					
	-25	-.5	-.4	-.4	-.4	-.4	-.3	-.2	-.2	-.2	-.1	.0	.0	.0	.1	.1	.4	.5	.5	.6	.6	.9	1.0	1.1	1.1	1.2					
	-20	-.7	-.7	-.7	-.7	-.7	-.6	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.3	-.3	.1	.1	.2	.2	.2	.5	.6	.7	.7	.8					
	-15	-1.0	-1.0	-1.0	-1.0	-1.0	-.9	-.9	-.8	-.8	-.8	-.7	-.7	-.6	-.6	-.6	-.3	-.2	-.2	-.2	-.2	.2	.2	.3	.3	.3					
	-10	-1.3	-1.4	-1.4	-1.4	-1.4	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.6	-.6	-.6	-.6	-.6	-.2	-.2	-.1	-.1	-.1					
	-5	-1.6	-1.7	-1.7	-1.7	-1.7	-1.5	-1.5	-1.5	-1.5	-1.5	-1.3	-1.3	-1.3	-1.3	-1.3	-1.0	-1.0	-1.0	-1.0	-1.0	-.6	-.6	-.6	-.5	-.5					
	0	-1.9	-2.0	-2.0	-2.0	-2.0	-1.8	-1.8	-1.8	-1.9	-1.9	-1.6	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3	-1.0	-1.0	-.9	-.9	-.9					
	4	-2.2	-2.3	-2.3	-2.3	-2.3	-2.1	-2.1	-2.1	-2.2	-2.2	-1.9	-2.0	-2.0	-2.0	-2.0	-1.6	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3					
	VENR=160 KIAS																														
3000	-54	-.9	-.9	-.9	-.9	-.9	-.7	-.7	-.7	-.7	-.7	-.5	-.5	-.5	-.5	-.4	-.1	.0	.0	.0	.0	.4	.4	.5	.5	.5					
	-50	-1.0	-1.0	-1.0	-1.0	-1.0	-.8	-.8	-.8	-.8	-.8	-.6	-.6	-.6	-.6	-.6	-.2	-.2	-.2	-.2	-.1	.2	.3	.3	.3	.4					
	-45	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.8	-.8	-.8	-.8	-.8	-.4	-.4	-.4	-.3	-.3	.0	.1	.1	.1	.2					
	-40	-1.3	-1.3	-1.4	-1.4	-1.4	-1.2	-1.2	-1.2	-1.2	-1.2	-1.0	-1.0	-1.0	-1.0	-1.0	-.6	-.6	-.6	-.6	-.6	-.2	-.2	-.1	-.1	-.1					
	-35	-1.5	-1.5	-1.5	-1.5	-1.6	-1.3	-1.4	-1.4	-1.4	-1.4	-1.2	-1.2	-1.2	-1.2	-1.2	-.8	-.8	-.8	-.8	-.8	-.4	-.4	-.4	-.4	-.3					
	-30	-1.7	-1.8	-1.8	-1.8	-1.8	-1.6	-1.6	-1.6	-1.6	-1.6	-1.4	-1.4	-1.4	-1.4	-1.4	-1.1	-1.1	-1.1	-1.1	-1.1	-.7	-.7	-.7	-.7	-.6					
	-25	-1.9	-2.0	-2.0	-2.0	-2.0	-1.8	-1.8	-1.8	-1.9	-1.9	-1.6	-1.7	-1.7	-1.7	-1.7	-1.3	-1.3	-1.3	-1.3	-1.4	-1.0	-1.0	-1.0	-1.0	-1.0					
	-20	-2.2	-2.2	-2.3	-2.3	-2.3	-2.0	-2.1	-2.1	-2.1	-2.2	-1.9	-1.9	-2.0	-2.0	-2.0	-1.6	-1.6	-1.6	-1.6	-1.7	-1.3	-1.3	-1.3	-1.3	-1.3					
	-15	-2.4	-2.5	-2.5	-2.5	-2.6	-2.3	-2.4	-2.4	-2.4	-2.4	-2.2	-2.2	-2.2	-2.3	-2.3	-1.9	-1.9	-1.9	-2.0	-2.0	-1.6	-1.6	-1.6	-1.6	-1.6					
	-10	-2.7	-2.8	-2.8	-2.8	-2.8	-2.5	-2.6	-2.7	-2.7	-2.7	-2.4	-2.5	-2.5	-2.5	-2.6	-2.2	-2.2	-2.2	-2.3	-2.3	-1.9	-1.9	-2.0	-2.0	-2.0					
	-5	-2.9	-3.0	-3.0	-3.1	-3.1	-2.8	-2.9	-2.9	-2.9	-3.0	-2.7	-2.8	-2.8	-2.8	-2.9	-2.4	-2.5	-2.5	-2.6	-2.6	-2.2	-2.3	-2.3	-2.3	-2.3					
	VENR=160 KIAS																														
	3500	-54	-2.3	-2.3	-2.3	-2.4	-2.4	-2.1	-2.2	-2.2	-2.2	-2.2	-2.0	-2.0	-2.0	-2.1	-2.1	-1.7	-1.7	-1.7	-1.7	-1.8	-1.4	-1.4	-1.4	-1.4	-1.4				
		-50	-2.3	-2.4	-2.4	-2.4	-2.5	-2.2	-2.3	-2.3	-2.3	-2.3	-2.1	-2.1	-2.2	-2.2	-2.2	-1.8	-1.8	-1.9	-1.9	-1.9	-1.5	-1.5	-1.5	-1.5	-1.5				
-45		-2.5	-2.5	-2.6	-2.6	-2.6	-2.3	-2.4	-2.4	-2.4	-2.5	-2.2	-2.3	-2.3	-2.3	-2.3	-1.9	-2.0	-2.0	-2.0	-2.0	-1.6	-1.7	-1.7	-1.7	-1.7					
-40		-2.6	-2.7	-2.7	-2.7	-2.8	-2.5	-2.5	-2.6	-2.6	-2.6	-2.4	-2.4	-2.4	-2.5	-2.5	-2.1	-2.1	-2.2	-2.2	-2.2	-1.8	-1.9	-1.9	-1.9	-1.9					
-35		-2.7	-2.8	-2.9	-2.9	-2.9	-2.6	-2.7	-2.7	-2.8	-2.8	-2.5	-2.6	-2.6	-2.6	-2.7	-2.3	-2.3	-2.4	-2.4	-2.4	-2.0	-2.1	-2.1	-2.1	-2.1					
-30		-2.9	-3.0	-3.0	-3.1	-3.1	-2.8	-2.9	-2.9	-3.0	-3.0	-2.7	-2.8	-2.8	-2.8	-2.9	-2.5	-2.5	-2.6	-2.6	-2.6	-2.2	-2.3	-2.3	-2.3	-2.3					
-25		-3.1	-3.2	-3.2	-3.3	-3.3	-3.0	-3.1	-3.1	-3.2	-3.2	-2.9	-3.0	-3.0	-3.0	-3.1	-2.7	-2.8	-2.8	-2.8	-2.8	-2.5	-2.5	-2.6	-2.6	-2.6					
-20		-3.3	-3.4	-3.4	-3.4	-3.5	-3.2	-3.3	-3.3	-3.4	-3.4	-3.1	-3.2	-3.2	-3.3	-3.3	-2.9	-3.0	-3.0	-3.1	-3.1	-2.7	-2.8	-2.8	-2.8	-2.9					
-15		-3.5	-3.6	-3.6	-3.7	-3.7	-3.4	-3.5	-3.5	-3.6	-3.6	-3.3	-3.4	-3.5	-3.5	-3.5	-3.1	-3.2	-3.3	-3.3	-3.3	-2.9	-3.0	-3.1	-3.1	-3.1					
VENR=160 KIAS																															

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 2.5 FROM ABOVE CLIMB GRADIENTS.

Figure 4-33 (Sheet 4 of 4)

APPROACH AND LANDING
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PROCEDURES FOR USE OF APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum landing weight permitted by climb requirements and the brake energy limits (Figure 4-36, if anti-ice systems are OFF; Figures 4-35 and 4-36, if anti-ice systems are ON). If residual ice is on the wing leading edge, apply the appropriate residual ice correction factors from Figure 4-34 to the maximum landing weight determined from Figures 4-35 and 4-36. If these limitations restrict the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing distance, V_{APP} and V_{REF} , from Figure 4-37, then apply the appropriate factors from the note below. If residual ice is on the wing leading edge, apply the residual ice correction factors in accordance with Figure 4-34. If the available runway length is less than the landing distance required, the airplane landing weight must be reduced.

NOTE

- Multiply the landing distance by 1.15 for -1 percent (downhill) runway gradient, by 1.5 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing distance obtained from Figure 4-37.
 - For inoperative antiskid system, multiply the landing distance obtained from Figure 4-37 by 1.25.
 - For FAR 135 operations, divide the landing distance obtained from Figure 4-37 by 0.6.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-38 and 4-39) are for advisory information only.

NOTE

- These procedures apply for normal landings at or below 15,200 pounds. Performance above 15,200 pounds is provided as additional information, for use in an emergency which requires a landing at a weight in excess of the maximum design landing weight of 15,200 pounds.

NOTE

- For operation from wet, slush, snow and ice covered runways, refer to Section VII.

RESIDUAL ICE LANDING CORRECTION FACTORS

LANDING FIELD CONDITIONS	MAXIMUM LANDING WEIGHT LIMITED BY CLIMB OR BRAKE ENERGY		LANDING DISTANCE	V _{APP}	V _{REF}
	FIGURE 4-35	FIGURE 4-36			
FIELD ELEVATION 4000 FEET OR BELOW NO DOWNHILL GRADIENT NO TAILWIND	NO CORRECTION	NO CORRECTION	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS
ALL OTHER CONDITIONS	NO CORRECTION	MULTIPLY BY 0.90	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS

The maximum allowable landing weight, landing distance, V_{APP} and V_{REF} must be corrected according to Figure 4-34 if any amount of residual ice is visible on the wing leading edge. These corrections must be made prior to the corrections noted in item 5 of the Procedures for Use of Approach and Landing Performance Tables.

1. Determine maximum landing weight permitted by climb requirements or brake energy (Figure 4-35) and landing distance, V_{APP} and V_{REF} (Figure 4-37).
2. Find the appropriate correction factor in Figure 4-34 and correct the landing data.
3. Continue with the notes in step 5 of the Procedures for Use of Approach and Landing Performance Tables.



Figure 4-34

PROCEDURES FOR USE OF APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum landing weight permitted by climb requirements and the brake energy limits (Figure 4-36, if anti-ice systems are OFF; Figures 4-35 and 4-36, if anti-ice systems are ON). If residual ice is on the wing leading edge, apply the appropriate residual ice correction factors from Figure 4-34 to the maximum landing weight determined from Figures 4-35 and 4-36. If these limitations restrict the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing distance, V_{APP} and V_{REF} , from Figure 4-37, then apply the appropriate factors from the note below. If residual ice is on the wing leading edge, apply the residual ice correction factors in accordance with Figure 4-34. If the available runway length is less than the landing distance required, the airplane landing weight must be reduced.

NOTE

- Multiply the landing distance by 1.15 for -1 percent (downhill) runway gradient, by 1.5 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing distance obtained from Figure 4-37.
 - For inoperative antiskid system, multiply the landing distance obtained from Figure 4-37 by 1.25.
 - For FAR 135 operations, divide the landing distance obtained from Figure 4-37 by 0.6.
 - For category II operations, multiply the landing distance obtained from Figure 4-37 by 1.15.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-38 and 4-39) are for advisory information only.

NOTE

- These procedures apply for normal landings at or below 15,200 pounds. Performance above 15,200 pounds is provided as additional information, for use in an emergency which requires a landing at a weight in excess of the maximum design landing weight of 15,200 pounds.

NOTE

- For operation from wet, slush, snow and ice covered runways, refer to Section VII.

RESIDUAL ICE LANDING CORRECTION FACTORS

LANDING FIELD CONDITIONS	MAXIMUM LANDING WEIGHT LIMITED BY CLIMB OR BRAKE ENERGY		LANDING DISTANCE	V _{APP}	V _{REF}
	FIGURE 4-35	FIGURE 4-36			
FIELD ELEVATION 4000 FEET OR BELOW NO DOWNHILL GRADIENT NO TAILWIND	NO CORRECTION	NO CORRECTION	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS
ALL OTHER CONDITIONS	NO CORRECTION	MULTIPLY BY 0.90	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS

The maximum allowable landing weight, landing distance, V_{APP} and V_{REF} must be corrected according to Figure 4-34 if any amount of residual ice is visible on the wing leading edge. These corrections must be made prior to the corrections noted in item 5 of the Procedures for Use of Approach and Landing Performance Tables.

1. Determine maximum landing weight permitted by climb requirements or brake energy (Figure 4-35) and landing distance, V_{APP} and V_{REF} (Figure 4-37).
2. Find the appropriate correction factor in Figure 4-34 and correct the landing data.
3. Continue with the notes in step 5 of the Procedures for Use of Approach and Landing Performance Tables.



Figure 4-34

PROCEDURES FOR USE OF APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum landing weight permitted by climb requirements and the brake energy limits (Figure 4-36, if anti-ice systems are OFF; Figures 4-35 and 4-36, if anti-ice systems are ON). If residual ice is on the wing leading edge, apply the appropriate residual ice correction factors from Figure 4-34 to the maximum landing weight determined from Figures 4-35 and 4-36. If these limitations restrict the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing distance, V_{APP} and V_{REF} , from Figure 4-37, then apply the appropriate factors from the note below. If residual ice is on the wing leading edge, apply the residual ice correction factors in accordance with Figure 4-34. If the available runway length is less than the landing distance required, the airplane landing weight must be reduced.

NOTE

- Multiply the landing distance by 1.15 for -1 percent (downhill) runway gradient, by 1.5 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing distance obtained from Figure 4-37.
 - For inoperative antiskid system, multiply the landing distance obtained from Figure 4-37 by 1.25.
 - For FAR 135 operations, divide the landing distance obtained from Figure 4-37 by 0.6.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-38 and 4-39) are for advisory information only.

NOTE

- These procedures apply for normal landings at or below 15,200 pounds. Performance above 15,200 pounds is provided as additional information, for use in an emergency which requires a landing at a weight in excess of the maximum design landing weight of 15,200 pounds.

NOTE

- For operation from wet, slush, snow and ice covered runways, refer to Section VII.

RESIDUAL ICE LANDING CORRECTION FACTORS

LANDING FIELD CONDITIONS	MAXIMUM LANDING WEIGHT LIMITED BY CLIMB OR BRAKE ENERGY		LANDING DISTANCE	V_{APP}	V_{REF}
	FIGURE 4-35	FIGURE 4-36			
FIELD ELEVATION 4000 FEET OR BELOW NO DOWNHILL GRADIENT NO TAILWIND	NO CORRECTION	NO CORRECTION	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS
ALL OTHER CONDITIONS	NO CORRECTION	MULTIPLY BY 0.90	MULTIPLY BY 1.30	ADD 7 KNOTS	ADD 7 KNOTS

The maximum allowable landing weight, landing distance, V_{APP} and V_{REF} must be corrected according to Figure 4-34 if any amount of residual ice is visible on the wing leading edge. These corrections must be made prior to the corrections noted in item 5 of the Procedures for Use of Approach and Landing Performance Tables.

1. Determine maximum landing weight permitted by climb requirements or brake energy (Figure 4-35) and landing distance, V_{APP} and V_{REF} (Figure 4-37).
2. Find the appropriate correction factor in Figure 4-34 and correct the landing data.
3. Continue with the notes in step 5 of the Procedures for Use of Approach and Landing Performance Tables.



Figure 4-34

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS

The maximum allowable landing weight with anti-ice OFF and for brake energy limits is determined from Figure 4-36 for a given set of conditions. The maximum allowable landing weight with anti-ice ON due to climb requirements, is determined from Figure 4-35. Figure 4-35 does not include data for brake energy limits, therefore, when determining maximum landing weight with anti-ice ON, refer to Figure 4-36 to determine if brake energy limits are a limiting factor, and use the lesser of the two weights. If residual ice is present, refer to Figure 4-34.

EXAMPLE: Anti-Ice - ON

Ambient Temperature = 5°C
Pressure Altitude = 8000 FEET
Wind = -10 KNOTS (TAILWIND)
Runway Gradient = -2% (DOWNHILL)

From Figure 4-35, Maximum Weight = 15,200 POUNDS
From Figure 4-36, Maximum Weight = 13,520 POUNDS
Therefore, Maximum Weight = 13,520 POUNDS

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS

ANTI-ICE SYSTEMS - ON

CONDITIONS:

Landing Gear - UP Speed Brakes - RETRACT
Wing Flaps - 15°

ALTITUDE - FEET									
S.L. TO 10,000		11000		12000		13000		14000	
TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT
-30 TO 10	15200	-30 TO 5	15200	-30 TO 0	15200	-30 TO -5	15200	-30 TO -11	15200
		10	14620	5 10	14670 14050	0 5 10	14680 14100 13520	-10 -5 0 5 10	15190 14640 14090 13550 13000



Figure 4-35

**MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS****FLAPS - 15⁰****CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT**
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
0	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14860	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14750	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14640	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14530	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	54	14440	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	15190	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14950	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14710	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14600	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14490	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14380	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14280	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	52	14230	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14930	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14810	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	14570	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14460	15170	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14350	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14240	14940	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14140	14820	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14020	14700	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200



Figure 4-36 (Sheet 1 of 5)

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS

The maximum allowable landing weight with anti-ice OFF and for brake energy limits is determined from Figure 4-36 for a given set of conditions. The maximum allowable landing weight with anti-ice ON due to climb requirements, is determined from Figure 4-35. Figure 4-35 does not include data for brake energy limits, therefore, when determining maximum landing weight with anti-ice ON, refer to Figure 4-36 to determine if brake energy limits are a limiting factor, and use the lesser of the two weights. If residual ice is present, refer to Figure 4-34.

EXAMPLE: Anti-Ice - ON

Ambient Temperature = 5°C
Pressure Altitude = 8000 FEET
Wind = -10 KNOTS (TAILWIND)
Runway Gradient = -2% (DOWNHILL)

From Figure 4-35, Maximum Weight = 15,200 POUNDS
From Figure 4-36, Maximum Weight = 13,520 POUNDS
Therefore, Maximum Weight = 13,520 POUNDS

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS

ANTI-ICE SYSTEMS - ON

CONDITIONS:

Landing Gear - UP Speed Brakes - RETRACT
Wing Flaps - 15°

ALTITUDE - FEET									
S.L. TO 10,000		11000		12000		13000		14000	
TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT
-30 TO 10	15200	-30 TO 5	15200	-30 TO 0	15200	-30 TO -5	15200	-30 TO -11	15200
		10	14620	5 10	14670 14050	0 5 10	14680 14100 13520	-10 -5 0 5 10	15190 14640 14090 13550 13000



Figure 4-35

MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
0	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14750	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14620	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14500	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	14390	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14270	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14160	14880	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14050	14770	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	13950	14650	15020	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	13840	14540	14910	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
10	54	13750	14450	14810	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14610	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14490	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14370	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14250	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	14140	14860	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14020	14740	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13910	14620	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	13810	14510	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	13700	14390	14750	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	13600	14280	14640	15010	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
20	52	13550	14230	14590	14950	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15010	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14600	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14480	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14350	15100	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14230	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14110	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14000	14710	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	13880	14590	14960	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	13770	14470	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13660	14360	14720	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	13560	14250	14600	14970	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	13460	14140	14490	14850	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	13350	14020	14370	14730	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

Figure 4-36 (Sheet 1 of 5)

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS

The maximum allowable landing weight with anti-ice OFF and for brake energy limits is determined from Figure 4-36 for a given set of conditions. The maximum allowable landing weight with anti-ice ON due to climb requirements, is determined from Figure 4-35. Figure 4-35 does not include data for brake energy limits, therefore, when determining maximum landing weight with anti-ice ON, refer to Figure 4-36 to determine if brake energy limits are a limiting factor, and use the lesser of the two weights. If residual ice is present, refer to Figure 4-34.

EXAMPLE: Anti-Ice - ON

Ambient Temperature = 5°C
Pressure Altitude = 8000 FEET
Wind = -10 KNOTS (TAILWIND)
Runway Gradient = -2% (DOWNHILL)

From Figure 4-35, Maximum Weight = 15,200 POUNDS
From Figure 4-36, Maximum Weight = 13,520 POUNDS
Therefore, Maximum Weight = 13,520 POUNDS

MAXIMUM LANDING WEIGHT - POUNDS PERMITTED BY CLIMB REQUIREMENTS

ANTI-ICE SYSTEMS - ON

CONDITIONS:

Landing Gear - UP Speed Brakes - RETRACT
Wing Flaps - 15°

ALTITUDE - FEET									
S.L. TO 10,000		11000		12000		13000		14000	
TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT	TEMP DEG. C	MAXIMUM LANDING WEIGHT
-30 TO 10	15200	-30 TO 5	15200	-30 TO 0	15200	-30 TO -5	15200	-30 TO -11	15200
		10	14620	5 10	14670 14050	0 5 10	14680 14100 13520	-10 -5 0 5 10	15190 14640 14090 13550 13000



Figure 4-35

**MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS****FLAPS - 15⁰****CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT**
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
0	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
10	25	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14860	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14750	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14640	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14530	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	54	14440	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
10	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	15190	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14950	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
20	25	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14710	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14600	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14490	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14380	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14280	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	52	14230	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
20	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14930	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14810	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
30	25	14570	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	14460	15170	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	14350	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	14240	14940	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	14140	14820	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	50	14020	14700	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200



Figure 4-36 (Sheet 1 of 5)

FLAPS - 15°

FLAPS - 15°

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
800	-35	14540	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-30	14400	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	14260	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	14130	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	14000	14700	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13880	14560	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13750	14430	14790	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13640	14310	14660	15020	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13520	14180	14530	14890	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13410	14060	14400	14760	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
15	13300	13940	14280	14630	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
20	13190	13830	14160	14510	14620	15200	15200	15200	15200	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
25	13090	13720	14050	14390	14490	15170	15200	15200	15200	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
30	12990	13610	13940	14270	14370	15040	15200	15200	15200	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
35	12890	13500	13830	14160	14260	14920	14950	14950	14950	14750	14950	14950	14950	14950	14950	14950	14950	14950	14950	14950	
38	12810	13430	13750	14080	14170	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	



**MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS****FLAPS - 15°****CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT**
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
3	-30	15030	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	14880	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	14610	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	14470	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14340	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14220	14960	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14100	14820	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13980	14700	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	13860	14570	14940	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	13750	14450	14810	15190	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	13630	14330	14690	15060	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	13530	14210	14570	14940	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13420	14100	14450	14820	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	13320	13990	14340	14700	14800	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	13220	13880	14230	14580	14680	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	48	13150	13810	14150	14500	14600	15200	15200	15200	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
4	-30	14760	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	14620	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	14480	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	14340	15100	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	14210	14960	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14090	14820	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13960	14690	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13840	14560	14930	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13730	14430	14800	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	13610	14310	14670	15040	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	13500	14190	14540	14910	15020	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	13390	14070	14420	14790	14890	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	13280	13960	14300	14670	14760	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13180	13840	14190	14550	14640	15200	15200	15200	15160	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	13080	13730	14080	14430	14520	15200	15200	15200	15040	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	12980	13630	13970	14320	14400	15100	15200	15200	14910	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	46	12950	13600	13930	14280	14370	15060	15200	15200	14880	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
5	-35	14640	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	14490	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	14350	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	14220	14960	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	14090	14820	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13960	14680	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13830	14550	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13710	14420	14790	15170	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13590	14290	14650	15030	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13480	14170	14520	14900	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	13360	14040	14400	14770	14860	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	13250	13930	14280	14640	14730	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	13150	13810	14160	14520	14600	15200	15200	15200	15200	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	13040	13700	14040	14400	14480	15190	15200	15200	15200	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	12940	13590	13930	14280	14360	15060	15200	15200	15200	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	12840	13480	13820	14160	14240	14930	15200	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	44	12750	13390	13720	14060	14140	14820	15180	15200	15200	14630	15200	15200	15200	15200	15150	15200	15200	15200	15200	15200

**MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS****FLAPS - 15°****CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF**

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWY GRADIENT PERCENT				RWY GRADIENT PERCENT				RWY GRADIENT PERCENT				RWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
6000	-35	14370	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-30	14230	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14090	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	13960	14690	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	13830	14550	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	13700	14410	14780	15170	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13580	14280	14650	15020	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13460	14150	14510	14890	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13340	14030	14380	14750	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13230	13910	14260	14620	14710	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13120	13790	14130	14490	14570	15200	15200	15200	15100	15200	15200	15200	15200	15200	15200	15200
	15	13010	13670	14010	14370	14450	15150	15200	15200	14960	15200	15200	15200	15200	15200	15200	15200
5000	-35	12910	13560	13900	14250	14320	15020	15200	15200	14830	15200	15200	15200	15200	15200	15200	15200
	-30	12800	13450	13780	14130	14200	14890	15200	15200	14700	15200	15200	15200	15200	15200	15200	15200
	0	12700	13340	13670	14010	14080	14770	15120	15200	14580	15200	15200	15200	15200	15200	15200	15200
	-25	12600	13230	13560	13900	13970	14640	14990	15200	14450	15150	15200	15200	14960	15200	15200	15200
	-20	12550	13180	13510	13840	13910	14580	14930	15030	14390	15030	15030	15030	14890	15030	15030	15030
	-15	12430	13060	13380	13720	13770	14440	14790	15140	14250	14930	15200	15200	14740	15200	15200	15200
	-10	12320	12950	13270	13600	13650	14310	14660	15010	14120	14800	15150	15200	14610	15200	15200	15200
	-5	12240	12850	13160	13490	13540	14190	14530	14880	14000	14670	14940	14940	14490	14940	14940	14940
	0	12170	12770	13090	13410	13460	14110	14440	14450	13920	14450	14450	14450	14400	14450	14450	14450
	5	12100	12680	13000	13320	13370	14040	14370	14380	13850	14380	14380	14380	14300	14380	14380	14380
	10	12030	12610	12930	13250	13300	13970	14300	14310	13780	14310	14310	14310	14200	14310	14310	14310
	15	11960	12540	12860	13180	13230	13900	14230	14240	13710	14240	14240	14240	14100	14240	14240	14240
4000	-35	11890	12470	12790	13110	13160	13830	14160	14170	13640	14170	14170	14170	14000	14170	14170	14170
	-30	11820	12400	12720	13040	13090	13760	14090	14100	13570	14100	14100	14100	13930	14100	14100	14100
	0	11750	12330	12650	12970	13020	13690	14020	14030	13500	14030	14030	14030	13860	14030	14030	14030
	-25	11680	12260	12580	12900	12950	13620	13950	13960	13430	13960	13960	13960	13790	13960	13960	13960
	-20	11610	12190	12510	12830	12880	13550	13880	13890	13360	13890	13890	13890	13720	13890	13890	13890
	-15	11540	12120	12440	12760	12810	13480	13810	13820	13290	13820	13820	13820	13650	13820	13820	13820
	-10	11470	12050	12370	12690	12740	13410	13740	13750	13220	13750	13750	13750	13580	13750	13750	13750
	-5	11400	11980	12300	12620	12670	13340	13670	13680	13150	13680	13680	13680	13510	13680	13680	13680
	0	11330	11910	12230	12550	12600	13270	13600	13610	13080	13610	13610	13610	13440	13610	13610	13610
	5	11260	11840	12160	12480	12530	13200	13530	13540	13010	13540	13540	13540	13370	13540	13540	13540
	10	11190	11770	12090	12410	12460	13130	13460	13470	12940	13470	13470	13470	13300	13470	13470	13470
	15	11120	11700	12020	12340	12390	13060	13390	13400	12870	13400	13400	13400	13230	13400	13400	13400
	20	11050	11630	11950	12270	12320	12990	13320	13330	12800	13330	13330	13330	13160	13330	13330	13330

Figure 4-36 (Sheet 3 of 5)

FLAPS - 15°

[illegible]

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
400	-30	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-10	14910	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14780	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14650	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14530	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
10	10	14410	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	15	14290	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	14180	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	14070	14750	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
30	30	13960	14640	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13850	14520	14880	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	40	13750	14410	14760	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	45	13640	14300	14650	15000	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
46	46	13610	14270	14610	14970	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
500	-35	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-30	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	-25	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	-20	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	14780	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
1000	-10	14650	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	14520	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	14400	15110	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	14280	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	14160	14850	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
1500	14040	14730	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	20	13930	14610	14970	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	25	13820	14490	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	30	13710	14380	14720	15080	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	35	13610	14260	14610	14960	15100	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
2000	40	13500	14150	14490	14850	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	44	13410	14060	14390	14740	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200

 Figure 4-36 (Sheet 2 of 5)

FLAPS - 15°

SPEEDBRAKES - RETRACT

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
800	-35	14540	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-30	14400	15120	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-25	14260	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-20	14130	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	14000	14700	15060	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13880	14560	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13750	14430	14790	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13640	14310	14660	15020	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13520	14180	14530	14890	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13410	14060	14400	14760	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
15	13300	13940	14280	14630	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
20	13190	13830	14160	14510	14620	15200	15200	15200	15200	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
25	13090	13720	14050	14390	14490	15170	15200	15200	15200	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
30	12990	13610	13940	14270	14370	15040	15200	15200	15200	14870	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	
35	12890	13500	13830	14160	14260	14920	14950	14950	14950	14750	14950	14950	14950	14950	14950	14950	14950	14950	14950	14950	
38	12810	13430	13750	14080	14170	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	14450	



MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
9	-35	14280	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	14140	14850	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	14000	14700	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13870	14560	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	13750	14430	14780	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13620	14300	14650	15010	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13500	14170	14510	14870	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13390	14040	14390	14740	14850	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13280	13920	14260	14610	14720	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13170	13800	14140	14480	14590	15200	15200	15200	15100	15200	15200	15200	15200	15200	15200	15200
	15	13060	13690	14020	14360	14460	15140	15200	15200	14960	15200	15200	15200	15200	15200	15200	15200
	20	12950	13580	13900	14240	14340	15010	15200	15200	14830	15200	15200	15200	15200	15200	15200	15200
	25	12850	13470	13790	14120	14220	14880	15200	15200	14700	15200	15200	15200	15200	15200	15200	15200
	30	12750	13360	13680	14010	14100	14750	15060	15060	14580	15060	15060	15060	15060	15060	15060	15060
	35	12650	13260	13580	13900	13980	14380	14380	14380	14380	14380	14380	14380	14380	14380	14380	14380
	36	12620	13220	13540	13860	13950	14160	14160	14160	14160	14160	14160	14160	14160	14160	14160	14160

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	14020	14720	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	13880	14570	14940	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13750	14430	14790	15160	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13620	14290	14650	15010	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13500	14160	14510	14870	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13370	14030	14380	14730	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13260	13910	14250	14600	14700	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13140	13780	14120	14460	14560	15200	15200	15200	15070	15200	15200	15200	15200	15200	15200	15200
	5	13030	13670	14000	14340	14430	15110	15200	15200	14930	15200	15200	15200	15200	15200	15200	15200
	10	12920	13550	13880	14210	14300	14980	15200	15200	14800	15200	15200	15200	15200	15200	15200	15200
	15	12820	13440	13760	14090	14180	14840	15190	15200	14670	15200	15200	15200	15170	15200	15200	15200
	20	12710	13330	13640	13970	14060	14710	15060	15200	14540	15200	15200	15200	15040	15200	15200	15200
	25	12610	13220	13530	13860	13940	14590	14930	15130	14410	15080	15130	15130	14900	15130	15130	15130
	30	12510	13110	13420	13750	13820	14470	14470	14470	14290	14470	14470	14470	14470	14470	14470	14470
	34	12420	13020	13330	13640	13720	13850	13850	13850	13850	13850	13850	13850	13850	13850	13850	13850

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT				RNWY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13760	14440	14800	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
1	-30	13620	14300	14660	15020	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13490	14160	14510	14870	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13370	14030	14370	14730	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13250	13900	14240	14590	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13130	13770	14110	14450	14550	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200
	-5	13010	13650	13980	14320	14410	15090	15200	15200	14910	15200	15200	15200	15200	15200	15200	15200
	0	12900	13530	13850	14190	14280	14950	15200	15200	14770	15200	15200	15200	15200	15200	15200	15200
	5	12790	13410	13730	14070	14150	14810	15160	15200	14640	15200	15200	15200	15140	15200	15200	15200
	10	12680	13300	13620	13950	14030	14680	15020	15200	14500	15180	15200	15200	15000	15200	15200	15200
	15	12580	13190	13500	13830	13900	14550	14890	15200	14380	15040	15200	15200	14860	15200	15200	15200
	20	12480	13080	13390	13710	13780	14420	14760	15100	14250	14910	15200	15200	14730	15200	15200	15200
	25	12380	12970	13280	13600	13670	14300	14560	14560	14130	14560	14560	14560	14560	14560	14560	14560
	30	12280	12870	13170	13490	13550	13930	13930	13930	13930	13930	13930	13930	13930	13930	13930	13930
	32	12230	12810	13120	13430	13500	13590	13590	13590	13590	13590	13590	13590	13590	13590	13590	13590



Figure 4-36 (Sheet 4 of 5)

MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
9	-35	13590	14300	14670	15060	15140	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	13460	14160	14520	14900	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13330	14020	14380	14750	14820	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13200	13880	14240	14610	14670	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	13080	13750	14100	14460	14530	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200
	-10	12960	13620	13970	14320	14390	15100	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200
	-5	12840	13500	13840	14190	14250	14950	15200	15200	14750	15200	15200	15200	15200	15200	15200	15200
	0	12730	13370	13710	14060	14120	14810	15170	15200	14610	15200	15200	15200	15130	15200	15200	15200
	5	12620	13260	13590	13930	13990	14670	15030	15200	14480	15180	15200	15200	14980	15200	15200	15200
	10	12510	13140	13470	13810	13860	14540	14890	15200	14340	15040	15200	15200	14840	15200	15200	15200
	15	12400	13030	13350	13690	13730	14400	14750	15110	14210	14900	15200	15200	14710	15200	15200	15200
	20	12300	12920	13240	13570	13610	14280	14620	14980	14090	14760	15110	15200	14570	15200	15200	15200
	25	12200	12810	13130	13450	13500	14150	14490	14840	13960	14630	14980	15200	14440	15130	15200	15200
	30	12100	12710	13020	13340	13380	14030	14360	14710	13840	14500	14850	15030	14310	14990	15030	15030
	35	12010	12600	12910	13230	13270	13910	14240	14370	13720	14370	14370	14370	14190	14370	14370	14370
	36	11980	12570	12880	13200	13230	13870	14160	14160	13680	14160	14160	14160	14150	14160	14160	14160

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13340	14030	14400	14770	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	13210	13890	14250	14620	14680	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13080	13750	14110	14470	14530	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200
0	-20	12950	13620	13970	14330	14380	15100	15200	15200	14890	15200	15200	15200	15200	15200	15200	15200
0	-15	12830	13490	13830	14190	14240	14950	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200
	-10	12710	13360	13700	14050	14100	14800	15160	15200	14600	15200	15200	15200	15110	15200	15200	15200
	-5	12600	13240	13570	13920	13970	14650	15010	15200	14460	15160	15200	15200	14960	15200	15200	15200
	0	12490	13120	13450	13790	13840	14510	14870	15200	14320	15010	15200	15200	14820	15200	15200	15200
	5	12380	13000	13330	13670	13710	14380	14730	15090	14180	14870	15200	15200	14680	15200	15200	15200
	10	12270	12890	13210	13540	13580	14250	14590	14950	14050	14730	15080	15200	14540	15200	15200	15200
	15	12170	12780	13100	13430	13460	14120	14460	14810	13920	14590	14940	15200	14400	15090	15200	15200
	20	12070	12670	12990	13310	13340	13990	14330	14670	13800	14460	14810	15160	14270	14950	15200	15200
	25	11970	12570	12880	13200	13230	13870	14200	14540	13680	14330	14670	15020	14140	14810	15120	15120
	30	11870	12460	12770	13090	13120	13750	14080	14420	13560	14210	14450	14450	14020	14450	14450	14450
	34	11790	12370	12670	12990	13010	13640	13880	13880	13450	13880	13880	13880	13880	13880	13880	13880

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13090	13770	14120	14490	14540	15200	15200	15200	15060	15200	15200	15200	15200	15200	15200	15200
1	-30	12960	13630	13980	14340	14390	15110	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200
0	-25	12830	13490	13840	14190	14240	14950	15200	15200	14750	15200	15200	15200	15200	15200	15200	15200
0	-20	12710	13360	13700	14050	14100	14790	15160	15200	14590	15200	15200	15200	15110	15200	15200	15200
0	-15	12590	13230	13570	13910	13960	14650	15000	15200	14450	15150	15200	15200	14950	15200	15200	15200
	-10	12470	13110	13440	13780	13820	14500	14850	15200	14300	15000	15200	15200	14800	15200	15200	15200
	-5	12360	12990	13310	13650	13690	14360	14710	15070	14160	14850	15200	15200	14650	15200	15200	15200
	0	12250	12870	13190	13530	13560	14220	14570	14920	14030	14710	15060	15200	14510	15200	15200	15200
	5	12140	12760	13070	13400	13430	14090	14430	14780	13900	14570	14910	15200	14370	15060	15200	15200
	10	12040	12640	12960	13280	13310	13960	14300	14640	13770	14430	14770	15130	14240	14910	15200	15200
	15	11940	12540	12850	13170	13190	13830	14170	14510	13640	14300	14640	14990	14110	14770	15120	15200
	20	11840	12430	12740	13050	13080	13710	14040	14380	13520	14170	14500	14850	13980	14640	14980	15190
	25	11740	12330	12630	12940	12960	13590	13910	14250	13400	14040	14370	14550	13850	14510	14550	14550
	30	11650	12230	12530	12840	12850	13470	13790	13930	13280	13920	13930	13930	13730	13930	13930	13930
	32	11600	12170	12470	12780	12800	13410	13610	13610	13220	13610	13610	13610	13610	13610	13610	13610

Figure 4-36 (Sheet 4 of 5)

MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
9	-35	14280	15000	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	14140	14850	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	14000	14700	15070	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13870	14560	14920	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-15	13750	14430	14780	15150	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13620	14300	14650	15010	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13500	14170	14510	14870	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13390	14040	14390	14740	14850	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	5	13280	13920	14260	14610	14720	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	10	13170	13800	14140	14480	14590	15200	15200	15200	15100	15200	15200	15200	15200	15200	15200	15200
	15	13060	13690	14020	14360	14460	15140	15200	15200	14960	15200	15200	15200	15200	15200	15200	15200
	20	12950	13580	13900	14240	14340	15010	15200	15200	14830	15200	15200	15200	15200	15200	15200	15200
	25	12850	13470	13790	14120	14220	14880	15200	15200	14700	15200	15200	15200	15200	15200	15200	15200
	30	12750	13360	13680	14010	14100	14750	15060	15060	14580	15060	15060	15060	15060	15060	15060	15060
	35	12650	13260	13580	13900	13980	14380	14380	14380	14380	14380	14380	14380	14380	14380	14380	14380
	36	12620	13220	13540	13860	13950	14160	14160	14160	14160	14160	14160	14160	14160	14160	14160	14160

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	14020	14720	15090	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-30	13880	14570	14940	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13750	14430	14790	15160	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13620	14290	14650	15010	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13500	14160	14510	14870	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13370	14030	14380	14730	14840	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	13260	13910	14250	14600	14700	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	0	13140	13780	14120	14460	14560	15200	15200	15200	15070	15200	15200	15200	15200	15200	15200	15200
	5	13030	13670	14000	14340	14430	15110	15200	15200	14930	15200	15200	15200	15200	15200	15200	15200
	10	12920	13550	13880	14210	14300	14980	15200	15200	14800	15200	15200	15200	15200	15200	15200	15200
	15	12820	13440	13760	14090	14180	14840	15190	15200	14670	15200	15200	15200	15170	15200	15200	15200
	20	12710	13330	13640	13970	14060	14710	15060	15200	14540	15200	15200	15200	15040	15200	15200	15200
	25	12610	13220	13530	13860	13940	14590	14930	15130	14410	15080	15130	15130	14900	15130	15130	15130
	30	12510	13110	13420	13750	13820	14470	14470	14470	14290	14470	14470	14470	14470	14470	14470	14470
	34	12420	13020	13330	13640	13720	13850	13850	13850	13850	13850	13850	13850	13850	13850	13850	13850

ALT FT	TEMP DEG C	WIND - KNOTS															
		-10				0				10				20			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13760	14440	14800	15180	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
1	-30	13620	14300	14660	15020	15130	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13490	14160	14510	14870	14980	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13370	14030	14370	14730	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13250	13900	14240	14590	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-10	13130	13770	14110	14450	14550	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200
	-5	13010	13650	13980	14320	14410	15090	15200	15200	14910	15200	15200	15200	15200	15200	15200	15200
	0	12900	13530	13850	14190	14280	14950	15200	15200	14770	15200	15200	15200	15200	15200	15200	15200
	5	12790	13410	13730	14070	14150	14810	15160	15200	14640	15200	15200	15200	15140	15200	15200	15200
	10	12680	13300	13620	13950	14030	14680	15020	15200	14500	15180	15200	15200	15000	15200	15200	15200
	15	12580	13190	13500	13830	13900	14550	14890	15200	14380	15040	15200	15200	14860	15200	15200	15200
	20	12480	13080	13390	13710	13780	14420	14760	15100	14250	14910	15200	15200	14730	15200	15200	15200
	25	12380	12970	13280	13600	13670	14300	14560	14560	14130	14560	14560	14560	14560	14560	14560	14560
	30	12280	12870	13170	13490	13550	13930	13930	13930	13930	13930	13930	13930	13930	13930	13930	13930
	32	12230	12810	13120	13430	13500	13590	13590	13590	13590	13590	13590	13590	13590	13590	13590	13590



Figure 4-36 (Sheet 4 of 5)

MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13500	14170	14530	14890	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
2	-30	13370	14030	14380	14740	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13240	13900	14240	14590	14680	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13120	13770	14100	14450	14540	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13000	13640	13970	14310	14400	15080	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-10	12880	13510	13840	14180	14260	14940	15200	15200	14750	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	12770	13390	13720	14050	14130	14790	15140	15200	14610	15200	15200	15200	15120	15200	15200	15200	15200	15200	15200	15200
	0	12660	13270	13590	13930	14000	14660	15000	15200	14480	15150	15200	15200	14970	15200	15200	15200	15200	15200	15200	15200
	5	12550	13160	13480	13800	13870	14520	14860	15200	14340	15010	15200	15200	14830	15200	15200	15200	15200	15200	15200	15200
	10	12450	13050	13360	13680	13750	14390	14730	15070	14210	14870	15200	15200	14700	15200	15200	15200	15190	15200	15200	15200
	15	12340	12940	13250	13570	13630	14260	14590	14940	14090	14740	15070	15200	14560	15200	15200	15200	15050	15200	15200	15200
	20	12240	12830	13140	13450	13510	14140	14470	14620	13970	14610	14620	14620	14430	14620	14620	14620	14620	14620	14620	14620
	25	12150	12730	13030	13340	13400	14010	14010	14010	13850	14010	14010	14010	14010	14010	14010	14010	14010	14010	14010	14010
	30	12040	12610	12910	13220	13270	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13250	13910	14250	14610	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
3	-30	13120	13770	14110	14460	14540	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	12990	13640	13970	14320	14390	15080	15200	15200	14890	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	12870	13510	13840	14180	14250	14930	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	12750	13380	13710	14040	14110	14780	15130	15200	14600	15200	15200	15200	15100	15200	15200	15200	15200	15200	15200	15200
0	-10	12640	13260	13580	13910	13980	14640	14980	15200	14460	15130	15200	15200	14950	15200	15200	15200	15200	15200	15200	15200
	-5	12530	13140	13460	13790	13850	14500	14840	15190	14320	14980	15200	15200	14810	15200	15200	15200	15200	15200	15200	15200
	0	12420	13020	13340	13660	13720	14360	14700	15050	14180	14840	15190	15200	14660	15200	15200	15200	15160	15200	15200	15200
	5	12310	12910	13220	13540	13600	14230	14560	14910	14050	14700	15040	15200	14530	15190	15200	15200	15020	15200	15200	15200
	10	12210	12800	13110	13420	13480	14100	14430	14770	13930	14570	14900	15180	14390	15050	15180	15180	14880	15180	15180	15180
	15	12110	12690	12990	13310	13360	13980	14300	14620	13800	14440	14620	14620	14260	14620	14620	14620	14620	14620	14620	14620
	20	12010	12590	12890	13200	13240	13860	14050	14050	13680	14050	14050	14050	14050	14050	14050	14050	14050	14050	14050	14050
	25	11910	12480	12780	13090	13130	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490
	28	11840	12410	12710	13010	13050	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13000	13640	13980	14330	14400	15090	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
4	-30	12870	13510	13840	14180	14250	14930	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	12750	13380	13700	14040	14110	14780	15130	15200	14590	15200	15200	15200	15090	15200	15200	15200	15200	15200	15200	15200
0	-20	12630	13250	13570	13910	13960	14630	14970	15200	14440	15120	15200	15200	14940	15200	15200	15200	15200	15200	15200	15200
0	-15	12510	13120	13440	13780	13830	14480	14830	15180	14300	14970	15200	15200	14790	15200	15200	15200	15200	15200	15200	15200
0	-10	12400	13000	13320	13650	13700	14340	14680	15030	14160	14820	15170	15200	14640	15200	15200	15200	15140	15200	15200	15200
	-5	12290	12890	13200	13520	13570	14210	14540	14890	14030	14680	15020	15200	14500	15170	15200	15200	14990	15200	15200	15200
	0	12180	12770	13080	13400	13440	14080	14400	14740	13890	14540	14880	15200	14360	15020	15200	15200	14840	15200	15200	15200
	5	12080	12660	12970	13280	13320	13950	14270	14610	13770	14400	14740	15050	14230	14880	15050	15050	14700	15050	15050	15050
	10	11970	12550	12860	13170	13200	13820	14140	14470	13640	14270	14540	14540	14100	14540	14540	14540	14540	14540	14540	14540
	15	11880	12450	12750	13050	13090	13700	14020	14030	13520	14030	14030	14030	13970	14030	14030	14030	14030	14030	14030	14030
	20	11780	12350	12640	12950	12980	13520	13520	13520	13400	13520	13520	13520	13520	13520	13520	13520	13520	13520	13520	13520
	25	11680	12240	12540	12840	12870	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010
	26	11650	12210	12500	12800	12830	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840



Figure 4-36 (Sheet 5 of 5)

LANDING DISTANCE - FEET

ACTUAL DISTANCE

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3350	2670	2480	2310	2140
-20	3410	2710	2520	2350	2180
-15	3460	2750	2560	2390	2220
-10	3510	2800	2610	2420	2260
-5	3570	2840	2650	2460	2290
0	3620	2890	2690	2500	2330
5	3680	2930	2730	2540	2370
10	3730	2980	2770	2580	2410
15	3790	3020	2820	2620	2440
20	3850	3070	2860	2660	2480
25	3910	3120	2900	2700	2520
30	3960	3160	2950	2750	2560
35	4020	3210	2990	2790	2600
40	4090	3260	3040	2830	2640
45	4150	3310	3080	2870	2680
50	4210	3350	3130	2910	2720
54	4260	3400	3170	2950	2750

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3120	2490	2320	2160	2010
-20	3170	2530	2360	2190	2040
-15	3210	2570	2390	2230	2070
-10	3260	2610	2430	2260	2110
-5	3310	2650	2470	2300	2140
0	3350	2690	2500	2330	2170
5	3400	2730	2540	2370	2210
10	3450	2770	2580	2400	2240
15	3500	2800	2620	2440	2270
20	3540	2840	2650	2480	2310
25	3590	2880	2690	2510	2340
30	3640	2930	2730	2550	2380
35	3690	2970	2770	2590	2410
40	3740	3010	2810	2620	2450
45	3790	3050	2850	2660	2480
50	3850	3090	2890	2700	2520
54	3890	3130	2920	2730	2550

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3080	2460	2290	2130	1980
-20	3130	2500	2330	2170	2010
-15	3170	2540	2360	2200	2050
-10	3220	2570	2400	2240	2080
-5	3260	2610	2440	2270	2110
0	3310	2650	2470	2300	2140
5	3350	2690	2510	2340	2180
10	3400	2730	2550	2370	2210
15	3450	2770	2580	2410	2240
20	3490	2810	2620	2440	2280
25	3540	2850	2660	2480	2310
30	3590	2890	2690	2510	2340
35	3640	2930	2730	2550	2380
40	3690	2970	2770	2590	2410
45	3740	3010	2810	2620	2450
50	3790	3050	2850	2660	2480
54	3830	3080	2880	2690	2510

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2980	2390	2220	2070	1920
-20	3030	2420	2260	2100	1950
-15	3070	2460	2290	2130	1980
-10	3110	2490	2330	2170	2010
-5	3150	2530	2360	2200	2050
0	3200	2570	2390	2230	2080
5	3240	2600	2430	2260	2110
10	3280	2640	2460	2300	2140
15	3320	2670	2500	2330	2170
20	3370	2710	2530	2360	2200
25	3410	2750	2570	2400	2230
30	3460	2790	2600	2430	2270
35	3500	2820	2640	2460	2300
40	3550	2860	2670	2500	2330
45	3590	2900	2710	2530	2360
50	3640	2940	2750	2570	2400
54	3680	2970	2780	2600	2420

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2890	2310	2160	2000	1860
-20	2930	2350	2190	2040	1890
-15	2970	2380	2220	2070	1920
-10	3010	2420	2250	2100	1950
-5	3050	2450	2280	2130	1980
0	3090	2480	2320	2160	2010
5	3130	2520	2350	2190	2040
10	3170	2550	2380	2220	2070
15	3210	2590	2410	2250	2100
20	3250	2620	2450	2280	2130
25	3290	2660	2480	2320	2160
30	3330	2690	2510	2350	2190
35	3380	2730	2550	2380	2220
40	3420	2760	2580	2410	2250
45	3460	2800	2620	2440	2280
50	3500	2830	2650	2480	2310
54	3540	2870	2680	2500	2340

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2800	2240	2090	1940	1800
-20	2840	2270	2120	1970	1830
-15	2880	2310	2150	2000	1860
-10	2910	2340	2180	2030	1890
-5	2950	2370	2210	2060	1920
0	2990	2400	2240	2090	1940
5	3020	2430	2270	2120	1970
10	3060	2470	2300	2150	2000
15	3100	2500	2330	2180	2030
20	3140	2530	2370	2210	2060
25	3180	2570	2400	2240	2090
30	3220	2600	2430	2270	2110
35	3250	2630	2460	2300	2140
40	3290	2670	2490	2330	2170
45	3330	2700	2520	2360	2200
50	3370	2730	2560	2390	2230
54	3410	2760	2580	2420	2260

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 1 of 30)

**MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS
OR BRAKE ENERGY LIMITS - POUNDS****FLAPS - 15°****CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT**
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	12840	13500	13850	14210	14250	14960	15200	15200	14760	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
2	-30	12710	13360	13710	14060	14100	14800	15170	15200	14600	15200	15200	15200	15110	15200	15200	15200	15200	15200	15200	15200
0	-25	12590	13230	13570	13920	13950	14650	15010	15200	14440	15150	15200	15200	14950	15200	15200	15200	15200	15200	15200	15200
0	-20	12470	13100	13430	13780	13810	14500	14850	15200	14290	14990	15200	15200	14790	15200	15200	15200	15200	15200	15200	15200
0	-15	12350	12980	13310	13640	13670	14350	14700	15060	14150	14840	15200	15200	14640	15200	15200	15200	15150	15200	15200	15200
0	-10	12230	12860	13180	13510	13540	14210	14550	14910	14010	14690	15040	15200	14490	15190	15200	15200	14990	15200	15200	15200
	-5	12120	12740	13060	13390	13410	14070	14410	14760	13870	14540	14890	15200	14350	15040	15200	15200	14840	15200	15200	15200
	0	12020	12620	12940	13260	13290	13940	14270	14620	13740	14400	14750	15100	14210	14890	15200	15200	14700	15200	15200	15200
	5	11910	12510	12820	13140	13160	13800	14140	14480	13610	14270	14610	14960	14070	14740	15090	15200	14550	15200	15200	15200
	10	11810	12400	12710	13030	13040	13680	14010	14350	13480	14130	14470	14820	13940	14600	14950	15200	14410	15090	15200	15200
	15	11710	12290	12600	12910	12930	13550	13880	14210	13360	14000	14330	14680	13810	14470	14810	15160	14280	14950	15200	15200
	20	11610	12190	12490	12800	12810	13430	13750	14090	13240	13870	14200	14540	13690	14330	14620	14620	14150	14620	14620	14620
	25	11520	12090	12390	12690	12700	13310	13630	13960	13120	13750	14000	14000	13560	14000	14000	14000	14000	14000	14000	14000
	30	11410	11980	12270	12570	12580	13180	13340	13340	13000	13340	13340	13340	13340	13340	13340	13340	13340	13340	13340	13340

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	12590	13240	13580	13930	13960	14660	15020	15200	14450	15160	15200	15200	14960	15200	15200	15200	15200	15200	15200	15200
3	-30	12460	13110	13440	13790	13810	14500	14860	15200	14300	15000	15200	15200	14800	15200	15200	15200	15200	15200	15200	15200
0	-25	12340	12980	13310	13650	13670	14350	14700	15070	14150	14840	15200	15200	14640	15200	15200	15200	15150	15200	15200	15200
0	-20	12220	12850	13170	13510	13530	14200	14550	14910	14000	14680	15040	15200	14480	15180	15200	15200	14980	15200	15200	15200
0	-15	12110	12730	13050	13380	13400	14060	14400	14760	13860	14530	14880	15200	14330	15020	15200	15200	14830	15200	15200	15200
0	-10	12000	12610	12920	13250	13260	13920	14260	14610	13720	14390	14730	15090	14190	14870	15200	15200	14670	15200	15200	15200
	-5	11890	12490	12800	13130	13140	13780	14120	14460	13580	14240	14590	14940	14050	14720	15070	15200	14530	15200	15200	15200
	0	11780	12380	12690	13010	13010	13650	13980	14320	13450	14100	14440	14790	13910	14570	14920	15200	14380	15060	15200	15200
	5	11680	12270	12570	12890	12890	13520	13850	14190	13330	13970	14300	14650	13780	14430	14770	15130	14240	14910	15200	15200
	10	11580	12160	12460	12770	12780	13400	13720	14050	13200	13840	14170	14510	13650	14300	14630	14980	14110	14770	15110	15200
	15	11480	12050	12350	12660	12660	13280	13590	13920	13080	13710	14040	14370	13520	14160	14490	14840	13970	14630	14640	14640
	20	11390	11950	12250	12550	12550	13160	13470	13800	12970	13590	13910	14050	13400	14030	14050	14050	13840	14050	14050	14050
	25	11290	11850	12140	12450	12440	13040	13350	13660	12850	13460	13660	13660	13280	13460	13460	13460	13460	13460	13460	13460
	28	11230	11780	12070	12370	12360	12960	13040	13040	12770	13040	13040	13040	13040	13040	13040	13040	13040	13040	13040	13040

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT		RNWX	GRADIENT	PERCENT	
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	12340	12980	13310	13660	13670	14360	14710	15080	14150	14850	15200	15200	14640	15200	15200	15200	15150	15200	15200	15200
4	-30	12220	12850	13180	13520	13530	14200	14550	14910	14000	14690	15040	15200	14480	15190	15200	15200	14980	15200	15200	15200
0	-25	12100	12720	13050	13380	13390	14050	14400	14760	13850	14530	14880	15200	14330	15020	15200	15200	14820	15200	15200	15200
0	-20	11980	12600	12920	13250	13250	13910	14250	14600	13710	14380	14720	15080	14180	14860	15200	15200	14660	15200	15200	15200
0	-15	11870	12480	12790	13120	13120	13770	14100	14450	13570	14230	14570	14930	14030	14700	15060	15200	14510	15200	15200	15200
0	-10	11760	12360	12670	12990	12990	13630	13960	14310	13430	14080	14420	14770	13890	14550	14900	15200	14360	15040	15200	15200
	-5	11650	12250	12550	12870	12870	13500	13830	14170	13300	13950	14280	14630	13750	14410	14750	15100	14210	14890	15200	15200
	0	11550	12130	12440	12750	12750	13370	13690	14030	13170	13810	14140	14480	13610	14270	14600	14950	14070	14740	15080	15200
	5	11450	12030	12330	12640	12630	13240	13560	13900	13050	13680	14010	14340	13480	14130	14460	14810	13930	14590	14930	15120
	10	11350	11920	12220	12520	12510	13120	13440	13760	12930	13550	13870	14210	13360	13990	14320	14630	13800	14450	14630	14630
	15	11260	11820	12110	12410	12400	13000	13320	13640	12810	13420	13740	14070	13230	13860	14070	14070	13670	14070	14070	14070
	20	11160	11720	12010	12310	12290	12890	13200	13510	12690	13300	13510	13510	13110	13510	13510	13510	13510	13510	13510	13510
	25	11070	11620	11910	12200	12180	12770	12930	12930	12580	12930	12930	12930	12930	12930	12930	12930	12930	12930	12930	12930
	26	11040	11590	11870	12170	12150	12730	12740	12740	12540	12740	12740	12740	12740	12740	12740	12740	12740	12740	12740	12740

Figure 4-36 (Sheet 5 of 5)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS			VAPP = 117 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3350	2670	2480	2310	2140
-20	3410	2710	2520	2350	2180
-15	3460	2750	2560	2390	2220
-10	3510	2800	2610	2420	2260
-5	3570	2840	2650	2460	2290
0	3620	2890	2690	2500	2330
5	3680	2930	2730	2540	2370
10	3730	2980	2770	2580	2410
15	3790	3020	2820	2620	2440
20	3850	3070	2860	2660	2480
25	3910	3120	2900	2700	2520
30	3960	3160	2950	2750	2560
35	4020	3210	2990	2790	2600
40	4090	3260	3040	2830	2640
45	4150	3310	3080	2870	2680
50	4210	3350	3130	2910	2720
54	4260	3400	3170	2950	2750

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS			VAPP = 113 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3120	2490	2320	2160	2010
-20	3170	2530	2360	2190	2040
-15	3210	2570	2390	2230	2070
-10	3260	2610	2430	2260	2110
-5	3310	2650	2470	2300	2140
0	3350	2690	2500	2330	2170
5	3400	2730	2540	2370	2210
10	3450	2770	2580	2400	2240
15	3500	2800	2620	2440	2270
20	3540	2840	2650	2480	2310
25	3590	2880	2690	2510	2340
30	3640	2930	2730	2550	2380
35	3690	2970	2770	2590	2410
40	3740	3010	2810	2620	2450
45	3790	3050	2850	2660	2480
50	3850	3090	2890	2700	2520
54	3890	3130	2920	2730	2550

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS			VAPP = 112 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3080	2460	2290	2130	1980
-20	3130	2500	2330	2170	2010
-15	3170	2540	2360	2200	2050
-10	3220	2570	2400	2240	2080
-5	3260	2610	2440	2270	2110
0	3310	2650	2470	2300	2140
5	3350	2690	2510	2340	2180
10	3400	2730	2550	2370	2210
15	3450	2770	2580	2410	2240
20	3490	2810	2620	2440	2280
25	3540	2850	2660	2480	2310
30	3590	2890	2690	2510	2340
35	3640	2930	2730	2550	2380
40	3690	2970	2770	2590	2410
45	3740	3010	2810	2620	2450
50	3790	3050	2850	2660	2480
54	3830	3080	2880	2690	2510

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS			VAPP = 110 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2980	2390	2220	2070	1920
-20	3030	2420	2260	2100	1950
-15	3070	2460	2290	2130	1980
-10	3110	2490	2330	2170	2010
-5	3150	2530	2360	2200	2050
0	3200	2570	2390	2230	2080
5	3240	2600	2430	2260	2110
10	3280	2640	2460	2300	2140
15	3320	2670	2500	2330	2170
20	3370	2710	2530	2360	2200
25	3410	2750	2570	2400	2230
30	3460	2790	2600	2430	2270
35	3500	2820	2640	2460	2300
40	3550	2860	2670	2500	2330
45	3590	2900	2710	2530	2360
50	3640	2940	2750	2570	2400
54	3680	2970	2780	2600	2420

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS			VAPP = 109 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2890	2310	2160	2000	1860
-20	2930	2350	2190	2040	1890
-15	2970	2380	2220	2070	1920
-10	3010	2420	2250	2100	1950
-5	3050	2450	2280	2130	1980
0	3090	2480	2320	2160	2010
5	3130	2520	2350	2190	2040
10	3170	2550	2380	2220	2070
15	3210	2590	2410	2250	2100
20	3250	2620	2450	2280	2130
25	3290	2660	2480	2320	2160
30	3330	2690	2510	2350	2190
35	3380	2730	2550	2380	2220
40	3420	2760	2580	2410	2250
45	3460	2800	2620	2440	2280
50	3500	2830	2650	2480	2310
54	3540	2870	2680	2500	2340

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS			VAPP = 107 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2800	2240	2090	1940	1800
-20	2840	2270	2120	1970	1830
-15	2880	2310	2150	2000	1860
-10	2910	2340	2180	2030	1890
-5	2950	2370	2210	2060	1920
0	2990	2400	2240	2090	1940
5	3020	2430	2270	2120	1970
10	3060	2470	2300	2150	2000
15	3100	2500	2330	2180	2030
20	3140	2530	2370	2210	2060
25	3180	2570	2400	2240	2090
30	3220	2600	2430	2270	2110
35	3250	2630	2460	2300	2140
40	3290	2670	2490	2330	2170
45	3330	2700	2520	2360	2200
50	3370	2730	2560	2390	2230
54	3410	2760	2580	2420	2260

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 1 of 30)

MAXIMUM LANDING WEIGHT PERMITTED BY CLIMB REQUIREMENTS OR BRAKE ENERGY LIMITS - POUNDS

FLAPS - 15°

CONDITIONS: LANDING GEAR - UP SPEEDBRAKES - RETRACT
ANTI-ICE SYSTEMS - OFF

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13500	14170	14530	14890	14990	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
2	-30	13370	14030	14380	14740	14830	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	13240	13900	14240	14590	14680	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	13120	13770	14100	14450	14540	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	13000	13640	13970	14310	14400	15080	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-10	12880	13510	13840	14180	14260	14940	15200	15200	14750	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
	-5	12770	13390	13720	14050	14130	14790	15140	15200	14610	15200	15200	15200	15120	15200	15200	15200	15200	15200	15200	15200
	0	12660	13270	13590	13930	14000	14660	15000	15200	14480	15150	15200	15200	14970	15200	15200	15200	15200	15200	15200	15200
	5	12550	13160	13480	13800	13870	14520	14860	15200	14340	15010	15200	15200	14830	15200	15200	15200	15200	15200	15200	15200
	10	12450	13050	13360	13680	13750	14390	14730	15070	14210	14870	15200	15200	14700	15200	15200	15200	15190	15200	15200	15200
	15	12340	12940	13250	13570	13630	14260	14590	14940	14090	14740	15070	15200	14560	15200	15200	15200	15050	15200	15200	15200
	20	12240	12830	13140	13450	13510	14140	14470	14620	13970	14610	14620	14620	14430	14620	14620	14620	14620	14620	14620	14620
	25	12150	12730	13030	13340	13400	14010	14010	14010	13850	14010	14010	14010	14010	14010	14010	14010	14010	14010	14010	14010
	30	12040	12610	12910	13220	13270	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330	13330

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13250	13910	14250	14610	14690	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
3	-30	13120	13770	14110	14460	14540	15200	15200	15200	15050	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	12990	13640	13970	14320	14390	15080	15200	15200	14890	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-20	12870	13510	13840	14180	14250	14930	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-15	12750	13380	13710	14040	14110	14780	15130	15200	14600	15200	15200	15200	15100	15200	15200	15200	15200	15200	15200	15200
0	-10	12640	13260	13580	13910	13980	14640	14980	15200	14460	15130	15200	15200	14950	15200	15200	15200	15200	15200	15200	15200
	-5	12530	13140	13460	13790	13850	14500	14840	15190	14320	14980	15200	15200	14810	15200	15200	15200	15200	15200	15200	15200
	0	12420	13020	13340	13660	13720	14360	14700	15050	14180	14840	15190	15200	14660	15200	15200	15200	15160	15200	15200	15200
	5	12310	12910	13220	13540	13600	14230	14560	14910	14050	14700	15040	15200	14530	15190	15200	15200	15020	15200	15200	15200
	10	12210	12800	13110	13420	13480	14100	14430	14770	13930	14570	14900	15180	14390	15050	15180	15180	14880	15180	15180	15180
	15	12110	12690	12990	13310	13360	13980	14300	14620	13800	14440	14620	14620	14260	14620	14620	14620	14620	14620	14620	14620
	20	12010	12590	12890	13200	13240	13860	14050	14050	13680	14050	14050	14050	14050	14050	14050	14050	14050	14050	14050	14050
	25	11910	12480	12780	13090	13130	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490	13490
	28	11840	12410	12710	13010	13050	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070	13070

ALT FT	TEMP DEG C	WIND - KNOTS																			
		-10				0				10				20				30			
		RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT				RWNY GRADIENT PERCENT			
		-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2	-2	0	1	2
1	-35	13000	13640	13980	14330	14400	15090	15200	15200	14900	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
4	-30	12870	13510	13840	14180	14250	14930	15200	15200	14740	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200	15200
0	-25	12750	13380	13700	14040	14110	14780	15130	15200	14590	15200	15200	15200	15090	15200	15200	15200	15200	15200	15200	15200
0	-20	12630	13250	13570	13910	13960	14630	14970	15200	14440	15120	15200	15200	14940	15200	15200	15200	15200	15200	15200	15200
0	-15	12510	13120	13440	13780	13830	14480	14830	15180	14300	14970	15200	15200	14790	15200	15200	15200	15200	15200	15200	15200
0	-10	12400	13000	13320	13650	13700	14340	14680	15030	14160	14820	15170	15200	14640	15200	15200	15200	15140	15200	15200	15200
	-5	12290	12890	13200	13520	13570	14210	14540	14890	14030	14680	15020	15200	14500	15170	15200	15200	14990	15200	15200	15200
	0	12180	12770	13080	13400	13440	14080	14400	14740	13890	14540	14880	15200	14360	15020	15200	15200	14840	15200	15200	15200
	5	12080	12660	12970	13280	13320	13950	14270	14610	13770	14400	14740	15050	14230	14880	15050	15050	14700	15050	15050	15050
	10	11970	12550	12860	13170	13200	13820	14140	14470	13640	14270	14540	14540	14100	14540	14540	14540	14540	14540	14540	14540
	15	11880	12450	12750	13050	13090	13700	14020	14030	13520	14030	14030	14030	13970	14030	14030	14030	14030	14030	14030	14030
	20	11780	12350	12640	12950	12980	13520	13520	13520	13400	13520	13520	13520	13520	13520	13520	13520	13520	13520	13520	13520
	25	11680	12240	12540	12840	12870	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010	13010
	26	11650	12210	12500	12800	12830	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840	12840



Figure 4-36 (Sheet 5 of 5)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS			VAPP = 117 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3350	2670	2480	2310	2140
-20	3410	2710	2520	2350	2180
-15	3460	2750	2560	2390	2220
-10	3510	2800	2610	2420	2260
-5	3570	2840	2650	2460	2290
0	3620	2890	2690	2500	2330
5	3680	2930	2730	2540	2370
10	3730	2980	2770	2580	2410
15	3790	3020	2820	2620	2440
20	3850	3070	2860	2660	2480
25	3910	3120	2900	2700	2520
30	3960	3160	2950	2750	2560
35	4020	3210	2990	2790	2600
40	4090	3260	3040	2830	2640
45	4150	3310	3080	2870	2680
50	4210	3350	3130	2910	2720
54	4260	3400	3170	2950	2750

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS			VAPP = 113 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3120	2490	2320	2160	2010
-20	3170	2530	2360	2190	2040
-15	3210	2570	2390	2230	2070
-10	3260	2610	2430	2260	2110
-5	3310	2650	2470	2300	2140
0	3350	2690	2500	2330	2170
5	3400	2730	2540	2370	2210
10	3450	2770	2580	2400	2240
15	3500	2800	2620	2440	2270
20	3540	2840	2650	2480	2310
25	3590	2880	2690	2510	2340
30	3640	2930	2730	2550	2380
35	3690	2970	2770	2590	2410
40	3740	3010	2810	2620	2450
45	3790	3050	2850	2660	2480
50	3850	3090	2890	2700	2520
54	3890	3130	2920	2730	2550

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS			VAPP = 112 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	3080	2460	2290	2130	1980
-20	3130	2500	2330	2170	2010
-15	3170	2540	2360	2200	2050
-10	3220	2570	2400	2240	2080
-5	3260	2610	2440	2270	2110
0	3310	2650	2470	2300	2140
5	3350	2690	2510	2340	2180
10	3400	2730	2550	2370	2210
15	3450	2770	2580	2410	2240
20	3490	2810	2620	2440	2280
25	3540	2850	2660	2480	2310
30	3590	2890	2690	2510	2340
35	3640	2930	2730	2550	2380
40	3690	2970	2770	2590	2410
45	3740	3010	2810	2620	2450
50	3790	3050	2850	2660	2480
54	3830	3080	2880	2690	2510

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS			VAPP = 110 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2980	2390	2220	2070	1920
-20	3030	2420	2260	2100	1950
-15	3070	2460	2290	2130	1980
-10	3110	2490	2330	2170	2010
-5	3150	2530	2360	2200	2050
0	3200	2570	2390	2230	2080
5	3240	2600	2430	2260	2110
10	3280	2640	2460	2300	2140
15	3320	2670	2500	2330	2170
20	3370	2710	2530	2360	2200
25	3410	2750	2570	2400	2230
30	3460	2790	2600	2430	2270
35	3500	2820	2640	2460	2300
40	3550	2860	2670	2500	2330
45	3590	2900	2710	2530	2360
50	3640	2940	2750	2570	2400
54	3680	2970	2780	2600	2420

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS			VAPP = 109 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2890	2310	2160	2000	1860
-20	2930	2350	2190	2040	1890
-15	2970	2380	2220	2070	1920
-10	3010	2420	2250	2100	1950
-5	3050	2450	2280	2130	1980
0	3090	2480	2320	2160	2010
5	3130	2520	2350	2190	2040
10	3170	2550	2380	2220	2070
15	3210	2590	2410	2250	2100
20	3250	2620	2450	2280	2130
25	3290	2660	2480	2320	2160
30	3330	2690	2510	2350	2190
35	3380	2730	2550	2380	2220
40	3420	2760	2580	2410	2250
45	3460	2800	2620	2440	2280
50	3500	2830	2650	2480	2310
54	3540	2870	2680	2500	2340

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS			VAPP = 107 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-25	2800	2240	2090	1940	1800
-20	2840	2270	2120	1970	1830
-15	2880	2310	2150	2000	1860
-10	2910	2340	2180	2030	1890
-5	2950	2370	2210	2060	1920
0	2990	2400	2240	2090	1940
5	3020	2430	2270	2120	1970
10	3060	2470	2300	2150	2000
15	3100	2500	2330	2180	2030
20	3140	2530	2370	2210	2060
25	3180	2570	2400	2240	2090
30	3220	2600	2430	2270	2110
35	3250	2630	2460	2300	2140
40	3290	2670	2490	2330	2170
45	3330	2700	2520	2360	2200
50	3370	2730	2560	2390	2230
54	3410	2760	2580	2420	2260

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 1 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2720	2170	2020	1880	1740
-20	2750	2200	2050	1910	1770
-15	2780	2230	2080	1940	1800
-10	2820	2260	2110	1960	1830
-5	2850	2290	2140	1990	1850
0	2890	2320	2170	2020	1880
5	2920	2350	2200	2050	1910
10	2960	2390	2230	2080	1930
15	2990	2420	2260	2100	1960
20	3030	2450	2290	2130	1990
25	3070	2480	2320	2160	2010
30	3100	2510	2340	2190	2040
35	3140	2540	2370	2220	2070
40	3180	2570	2410	2250	2100
45	3210	2600	2440	2280	2120
50	3250	2630	2470	2300	2150
54	3280	2660	2490	2330	2180

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2630	2100	1960	1820	1690
-20	2660	2130	1990	1850	1710
-15	2700	2160	2010	1870	1740
-10	2730	2190	2040	1900	1760
-5	2760	2220	2070	1930	1790
0	2790	2250	2100	1950	1820
5	2830	2280	2120	1980	1840
10	2860	2310	2150	2010	1870
15	2890	2330	2180	2030	1890
20	2930	2360	2210	2060	1920
25	2960	2390	2240	2090	1940
30	2990	2420	2260	2110	1970
35	3030	2450	2290	2140	2000
40	3060	2480	2320	2170	2020
45	3100	2510	2350	2190	2050
50	3130	2540	2380	2220	2070
54	3160	2570	2400	2250	2100

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2550	2040	1900	1760	1640
-20	2580	2060	1920	1780	1660
-15	2610	2090	1950	1810	1680
-10	2640	2120	1970	1840	1710
-5	2670	2150	2000	1860	1730
0	2700	2170	2030	1890	1750
5	2730	2200	2050	1910	1780
10	2760	2230	2080	1940	1800
15	2790	2250	2100	1960	1820
20	2830	2280	2130	1990	1850
25	2860	2310	2160	2010	1870
30	2890	2340	2180	2040	1900
35	2920	2360	2210	2060	1920
40	2950	2390	2240	2090	1950
45	2980	2420	2260	2110	1970
50	3020	2450	2290	2140	2000
54	3040	2470	2310	2160	2020

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2470	1970	1830	1710	1590
-20	2500	2000	1860	1730	1610
-15	2530	2020	1880	1750	1630
-10	2550	2050	1910	1770	1650
-5	2580	2070	1930	1800	1670
0	2610	2100	1960	1820	1690
5	2640	2120	1980	1840	1720
10	2670	2150	2010	1870	1740
15	2700	2170	2030	1890	1760
20	2730	2200	2050	1920	1780
25	2760	2230	2080	1940	1800
30	2790	2250	2100	1960	1830
35	2820	2280	2130	1990	1850
40	2850	2310	2160	2010	1880
45	2880	2330	2180	2040	1900
50	2910	2360	2210	2060	1920
54	2930	2380	2230	2080	1940

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2390	1900	1770	1650	1530
-20	2410	1930	1790	1670	1550
-15	2440	1950	1820	1690	1580
-10	2470	1980	1840	1720	1600
-5	2500	2000	1860	1740	1620
0	2520	2020	1880	1760	1640
5	2550	2050	1910	1780	1660
10	2580	2070	1930	1800	1680
15	2600	2100	1950	1820	1700
20	2630	2120	1980	1840	1720
25	2660	2140	2000	1870	1740
30	2680	2170	2030	1890	1760
35	2710	2190	2050	1910	1780
40	2740	2220	2070	1930	1800
45	2770	2240	2100	1960	1820
50	2800	2270	2120	1980	1850
54	2820	2290	2140	2000	1870

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25	2310	1840	1720	1600	1480
-20	2330	1860	1740	1620	1500
-15	2360	1880	1760	1640	1520
-10	2380	1900	1780	1660	1540
-5	2410	1930	1800	1680	1560
0	2430	1950	1820	1700	1580
5	2460	1970	1840	1720	1600
10	2480	2000	1860	1740	1620
15	2510	2020	1880	1760	1640
20	2540	2040	1900	1780	1660
25	2560	2060	1930	1800	1680
30	2590	2090	1950	1820	1700
35	2610	2110	1970	1840	1720
40	2640	2130	1990	1860	1740
45	2660	2160	2010	1880	1760
50	2690	2180	2040	1900	1780
54	2710	2200	2060	1920	1790

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 2 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
1000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★ WEIGHT = 16300 POUNDS VREF = 111 KIAS VAPP = 117 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3460	2750	2560	2380	2220
-20	3520	2800	2610	2430	2260
-15	3570	2850	2650	2470	2290
-10	3630	2890	2690	2510	2330
-5	3690	2940	2740	2550	2370
0	3750	2990	2780	2590	2410
5	3810	3030	2830	2630	2450
10	3860	3080	2870	2670	2490
15	3920	3130	2920	2720	2530
20	3990	3180	2960	2760	2570
25	4050	3230	3010	2800	2610
30	4110	3280	3050	2850	2650
35	4180	3330	3100	2890	2690
40	4240	3380	3150	2930	2740
45	4310	3430	3200	2980	2780
50	4370	3480	3240	3020	2820
52	4400	3510	3270	3050	2840

WEIGHT = 15200 POUNDS VREF = 107 KIAS VAPP = 113 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3210	2570	2390	2230	2070
-20	3260	2610	2430	2260	2110
-15	3310	2650	2470	2300	2140
-10	3360	2690	2510	2340	2180
-5	3410	2730	2550	2370	2210
0	3460	2770	2590	2410	2250
5	3510	2810	2630	2450	2280
10	3560	2860	2660	2490	2320
15	3610	2900	2700	2520	2350
20	3660	2940	2740	2560	2390
25	3710	2980	2780	2600	2420
30	3770	3030	2820	2640	2460
35	3820	3070	2870	2670	2500
40	3870	3110	2910	2710	2530
45	3930	3160	2950	2750	2570
50	3980	3200	2990	2790	2610
52	4010	3220	3010	2810	2620

WEIGHT = 15000 POUNDS VREF = 106 KIAS VAPP = 112 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3170	2540	2360	2200	2050
-20	3220	2580	2400	2240	2080
-15	3270	2620	2440	2270	2110
-10	3310	2660	2480	2310	2150
-5	3360	2700	2510	2340	2180
0	3410	2740	2550	2380	2220
5	3460	2780	2590	2420	2250
10	3510	2820	2630	2450	2290
15	3560	2860	2670	2490	2320
20	3610	2900	2710	2530	2350
25	3660	2940	2750	2560	2390
30	3710	2980	2790	2600	2430
35	3760	3020	2820	2640	2460
40	3810	3070	2870	2680	2500
45	3860	3110	2910	2710	2530
50	3920	3150	2950	2750	2570
52	3940	3170	2970	2770	2590

WEIGHT = 14500 POUNDS VREF = 105 KIAS VAPP = 110 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3070	2460	2290	2130	1980
-20	3110	2500	2330	2170	2010
-15	3160	2530	2360	2200	2050
-10	3200	2570	2400	2230	2080
-5	3250	2610	2430	2270	2110
0	3290	2650	2470	2300	2140
5	3340	2680	2510	2340	2180
10	3380	2720	2540	2370	2210
15	3430	2760	2580	2410	2240
20	3480	2800	2610	2440	2280
25	3520	2840	2650	2480	2310
30	3570	2880	2690	2510	2340
35	3620	2920	2730	2550	2380
40	3670	2960	2760	2580	2410
45	3710	3000	2800	2620	2440
50	3760	3040	2840	2650	2480
52	3790	3060	2860	2670	2500

WEIGHT = 14000 POUNDS VREF = 103 KIAS VAPP = 109 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2970	2380	2220	2070	1920
-20	3010	2420	2250	2100	1950
-15	3060	2450	2290	2130	1980
-10	3100	2490	2320	2160	2010
-5	3140	2520	2350	2200	2040
0	3180	2560	2390	2230	2070
5	3220	2600	2420	2260	2110
10	3260	2630	2460	2290	2140
15	3310	2670	2490	2330	2170
20	3350	2700	2530	2360	2200
25	3390	2740	2560	2390	2230
30	3440	2780	2600	2420	2260
35	3480	2810	2630	2460	2290
40	3530	2850	2670	2490	2330
45	3570	2890	2700	2530	2360
50	3620	2930	2740	2560	2390
52	3640	2950	2760	2580	2410

WEIGHT = 13500 POUNDS VREF = 101 KIAS VAPP = 107 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2880	2310	2150	2000	1860
-20	2920	2340	2180	2030	1890
-15	2960	2370	2210	2060	1920
-10	2990	2410	2250	2090	1950
-5	3030	2440	2280	2120	1980
0	3070	2470	2310	2150	2010
5	3110	2510	2340	2180	2040
10	3150	2540	2370	2220	2060
15	3190	2580	2410	2250	2090
20	3230	2610	2440	2280	2120
25	3270	2640	2470	2310	2150
30	3310	2680	2510	2340	2180
35	3350	2710	2540	2370	2210
40	3400	2750	2570	2400	2240
45	3440	2790	2610	2440	2280
50	3480	2820	2640	2470	2310
52	3500	2840	2660	2480	2320

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 3 of 30)

LANDING DISTANCE – FEET ACTUAL DISTANCE

FLAPS – FULL
1000 FEET

CONDITIONS: LANDING GEAR – DOWN
SPEED BRAKES – EXTEND AFTER TOUCHDOWN
AIRSPEED – VREF AT 50 FEET

ANTI-ICE SYSTEMS – ON OR OFF
THRUST – IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS						WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2790	2230	2080	1940	1800	-25	2700	2160	2010	1870	1740
-20	2820	2270	2110	1970	1830	-20	2730	2190	2040	1900	1770
-15	2860	2300	2140	1990	1850	-15	2770	2220	2070	1930	1790
-10	2900	2330	2170	2020	1880	-10	2800	2250	2100	1960	1820
-5	2930	2360	2200	2050	1910	-5	2830	2280	2130	1980	1840
0	2970	2390	2230	2080	1940	0	2870	2310	2160	2010	1870
5	3010	2420	2260	2110	1970	5	2900	2340	2190	2040	1900
10	3040	2460	2290	2140	1990	10	2940	2370	2220	2070	1930
15	3080	2490	2320	2170	2020	15	2970	2400	2240	2090	1950
20	3120	2520	2360	2200	2050	20	3010	2430	2270	2120	1980
25	3150	2550	2390	2230	2080	25	3040	2460	2300	2150	2010
30	3190	2590	2420	2260	2110	30	3080	2490	2330	2180	2030
35	3230	2620	2450	2290	2140	35	3110	2530	2360	2210	2060
40	3270	2650	2480	2320	2160	40	3150	2560	2390	2240	2090
45	3310	2680	2510	2350	2190	45	3190	2590	2420	2260	2110
50	3350	2720	2540	2380	2220	50	3220	2620	2450	2290	2140
52	3370	2730	2560	2390	2240	52	3240	2630	2470	2310	2150

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS						WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2610	2090	1950	1810	1680	-25	2530	2020	1880	1750	1630
-20	2640	2120	1980	1840	1710	-20	2560	2050	1910	1770	1650
-15	2680	2150	2000	1860	1730	-15	2590	2080	1930	1800	1680
-10	2710	2180	2030	1890	1760	-10	2620	2100	1960	1820	1700
-5	2740	2210	2060	1920	1780	-5	2650	2130	1990	1850	1720
0	2770	2230	2080	1940	1810	0	2680	2160	2010	1870	1740
5	2800	2260	2110	1970	1830	5	2710	2180	2040	1900	1770
10	2840	2290	2140	1990	1860	10	2740	2210	2060	1920	1790
15	2870	2320	2170	2020	1880	15	2770	2240	2090	1950	1810
20	2900	2350	2190	2050	1910	20	2800	2260	2110	1970	1840
25	2930	2380	2220	2070	1930	25	2830	2290	2140	2000	1860
30	2970	2410	2250	2100	1960	30	2860	2320	2170	2020	1880
35	3000	2430	2280	2130	1980	35	2890	2350	2190	2050	1910
40	3030	2460	2310	2150	2010	40	2920	2370	2220	2070	1930
45	3070	2490	2330	2180	2040	45	2950	2400	2250	2100	1960
50	3100	2520	2360	2210	2060	50	2990	2430	2270	2120	1980
52	3120	2540	2370	2220	2070	52	3000	2440	2290	2140	1990

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS						WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2450	1950	1820	1700	1580	-25	2360	1880	1760	1640	1520
-20	2470	1980	1840	1720	1600	-20	2390	1910	1780	1660	1540
-15	2500	2000	1870	1740	1620	-15	2420	1930	1800	1680	1560
-10	2530	2030	1890	1760	1640	-10	2440	1950	1820	1700	1580
-5	2560	2050	1910	1780	1660	-5	2470	1980	1850	1720	1600
0	2580	2080	1940	1810	1680	0	2490	2000	1870	1740	1620
5	2610	2100	1960	1830	1710	5	2520	2030	1890	1760	1640
10	2640	2130	1990	1850	1730	10	2550	2050	1910	1790	1660
15	2670	2150	2010	1870	1750	15	2570	2070	1930	1810	1690
20	2700	2180	2040	1900	1770	20	2600	2100	1960	1830	1710
25	2730	2200	2060	1920	1790	25	2630	2120	1980	1850	1730
30	2750	2230	2080	1940	1810	30	2650	2140	2000	1870	1750
35	2780	2260	2110	1970	1830	35	2680	2170	2030	1890	1770
40	2810	2280	2130	1990	1860	40	2710	2190	2050	1910	1790
45	2840	2310	2160	2020	1880	45	2730	2220	2070	1940	1810
50	2870	2330	2180	2040	1900	50	2760	2240	2100	1960	1830
52	2890	2350	2200	2050	1910	52	2770	2250	2110	1970	1840

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 4 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL 2000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET
ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★ WEIGHT = 16300 POUNDS VREF = 111 KIAS VAPP = 117 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3570	2850	2650	2470	2290
-20	3630	2890	2690	2510	2330
-15	3690	2940	2740	2550	2370
-10	3750	2990	2790	2590	2410
-5	3820	3040	2830	2640	2460
0	3880	3090	2880	2680	2500
5	3940	3140	2930	2730	2540
10	4000	3190	2970	2770	2580
15	4070	3240	3020	2810	2620
20	4130	3290	3070	2860	2660
25	4200	3350	3120	2910	2710
30	4270	3400	3170	2950	2750
35	4340	3450	3220	3000	2790
40	4410	3510	3270	3040	2840
45	4480	3560	3320	3090	2880
49	4540	3610	3360	3130	2920

WEIGHT = 15200 POUNDS VREF = 107 KIAS VAPP = 113 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3310	2650	2470	2300	2140
-20	3360	2690	2510	2340	2180
-15	3420	2740	2550	2380	2210
-10	3470	2780	2590	2410	2250
-5	3520	2820	2630	2450	2290
0	3570	2860	2670	2490	2320
5	3620	2910	2710	2530	2360
10	3680	2950	2760	2570	2400
15	3730	3000	2800	2610	2430
20	3790	3040	2840	2650	2470
25	3840	3090	2880	2690	2510
30	3900	3130	2920	2730	2550
35	3950	3180	2970	2770	2580
40	4010	3220	3010	2810	2620
45	4070	3270	3050	2850	2660
50	4130	3320	3100	2890	2700

WEIGHT = 15000 POUNDS VREF = 106 KIAS VAPP = 112 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3270	2620	2440	2270	2110
-20	3320	2660	2480	2310	2150
-15	3370	2700	2520	2350	2180
-10	3420	2740	2560	2380	2220
-5	3470	2780	2600	2420	2260
0	3520	2830	2640	2460	2290
5	3570	2870	2680	2500	2330
10	3620	2910	2720	2540	2360
15	3680	2950	2760	2570	2400
20	3730	3000	2800	2610	2440
25	3780	3040	2840	2650	2470
30	3840	3090	2880	2690	2510
35	3890	3130	2920	2730	2550
40	3950	3170	2970	2770	2590
45	4000	3220	3010	2810	2620
50	4060	3270	3050	2850	2660

WEIGHT = 14500 POUNDS VREF = 105 KIAS VAPP = 110 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3160	2530	2360	2200	2050
-20	3210	2570	2400	2240	2080
-15	3250	2610	2440	2270	2110
-10	3300	2650	2470	2310	2150
-5	3350	2690	2510	2340	2180
0	3390	2730	2550	2380	2220
5	3440	2770	2590	2410	2250
10	3490	2810	2630	2450	2290
15	3540	2850	2660	2490	2320
20	3590	2890	2700	2520	2350
25	3640	2930	2740	2560	2390
30	3690	2970	2780	2600	2420
35	3740	3020	2820	2630	2460
40	3790	3060	2860	2670	2500
45	3840	3100	2900	2710	2530
50	3890	3140	2940	2750	2570

WEIGHT = 14000 POUNDS VREF = 103 KIAS VAPP = 109 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	3060	2450	2290	2130	1980
-20	3100	2490	2320	2160	2010
-15	3140	2530	2360	2200	2050
-10	3190	2560	2390	2230	2080
-5	3230	2600	2430	2270	2110
0	3280	2640	2460	2300	2140
5	3320	2680	2500	2330	2180
10	3370	2710	2540	2370	2210
15	3410	2750	2570	2400	2240
20	3460	2790	2610	2440	2270
25	3500	2830	2640	2470	2310
30	3550	2870	2680	2510	2340
35	3590	2910	2720	2540	2370
40	3640	2950	2760	2580	2410
45	3690	2990	2790	2610	2440
50	3740	3030	2830	2650	2470

WEIGHT = 13500 POUNDS VREF = 101 KIAS VAPP = 107 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-25	2960	2380	2210	2060	1920
-20	3000	2410	2250	2090	1950
-15	3040	2440	2280	2130	1980
-10	3080	2480	2310	2160	2010
-5	3120	2520	2350	2190	2040
0	3160	2550	2380	2220	2070
5	3200	2590	2420	2250	2100
10	3250	2620	2450	2290	2130
15	3290	2660	2480	2320	2160
20	3330	2690	2520	2350	2190
25	3370	2730	2550	2380	2230
30	3410	2770	2590	2420	2260
35	3460	2800	2620	2450	2290
40	3500	2840	2660	2480	2320
45	3550	2880	2690	2520	2350
50	3590	2910	2730	2550	2380

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 5 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
2000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS			VAPP = 105 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2860	2300	2140	2000	1850
-20	2900	2330	2170	2030	1880
-15	2940	2360	2210	2060	1910
-10	2980	2400	2240	2090	1940
-5	3010	2430	2270	2120	1970
0	3050	2460	2300	2150	2000
5	3090	2500	2330	2180	2030
10	3130	2530	2370	2210	2060
15	3170	2560	2400	2240	2090
20	3210	2600	2430	2270	2120
25	3250	2630	2460	2300	2150
30	3290	2670	2490	2330	2180
35	3330	2700	2530	2360	2210
40	3370	2740	2560	2390	2240
45	3410	2770	2590	2430	2270
50	3450	2810	2630	2460	2300

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS			VAPP = 103 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2770	2220	2070	1930	1790
-20	2810	2260	2100	1960	1820
-15	2840	2290	2130	1990	1850
-10	2880	2320	2160	2020	1880
-5	2910	2350	2190	2040	1900
0	2950	2380	2220	2070	1930
5	2980	2410	2250	2100	1960
10	3020	2440	2280	2130	1990
15	3060	2470	2310	2160	2010
20	3090	2510	2340	2190	2040
25	3130	2540	2370	2220	2070
30	3170	2570	2400	2250	2100
35	3210	2600	2440	2280	2130
40	3240	2640	2470	2310	2160
45	3280	2670	2500	2340	2180
50	3320	2700	2530	2370	2210

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS			VAPP = 101 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2680	2150	2000	1860	1730
-20	2710	2180	2030	1890	1760
-15	2750	2210	2060	1920	1780
-10	2780	2240	2090	1950	1810
-5	2810	2270	2120	1970	1840
0	2850	2300	2150	2000	1860
5	2880	2330	2170	2030	1890
10	2910	2360	2200	2060	1910
15	2950	2390	2230	2080	1940
20	2980	2420	2260	2110	1970
25	3020	2450	2290	2140	1990
30	3050	2480	2320	2170	2020
35	3090	2510	2350	2190	2050
40	3120	2540	2380	2220	2070
45	3160	2570	2410	2250	2100
50	3190	2600	2430	2280	2130

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS			VAPP = 99 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2590	2080	1940	1800	1680
-20	2620	2110	1960	1830	1700
-15	2650	2130	1990	1850	1720
-10	2690	2160	2020	1880	1750
-5	2720	2190	2040	1900	1770
0	2750	2220	2070	1930	1790
5	2780	2250	2100	1950	1820
10	2810	2270	2120	1980	1840
15	2840	2300	2150	2010	1870
20	2880	2330	2180	2030	1890
25	2910	2360	2200	2060	1920
30	2940	2390	2230	2080	1940
35	2970	2410	2260	2110	1970
40	3000	2440	2290	2140	2000
45	3040	2470	2310	2160	2020
50	3070	2500	2340	2190	2050

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS			VAPP = 97 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2500	2010	1870	1740	1620
-20	2530	2030	1890	1760	1640
-15	2560	2060	1920	1790	1670
-10	2590	2080	1940	1810	1690
-5	2620	2110	1970	1830	1710
0	2650	2140	1990	1860	1730
5	2680	2160	2020	1880	1750
10	2710	2190	2040	1910	1780
15	2740	2210	2070	1930	1800
20	2770	2240	2090	1950	1820
25	2800	2270	2120	1980	1840
30	2830	2290	2150	2000	1870
35	2860	2320	2170	2030	1890
40	2890	2350	2200	2050	1920
45	2920	2380	2220	2080	1940
50	2950	2400	2250	2100	1960

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS			VAPP = 95 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2420	1930	1810	1680	1560
-20	2450	1960	1830	1700	1590
-15	2470	1980	1850	1730	1610
-10	2500	2010	1870	1750	1630
-5	2530	2030	1890	1770	1650
0	2560	2060	1920	1790	1670
5	2580	2080	1940	1810	1690
10	2610	2110	1970	1830	1710
15	2640	2130	1990	1860	1730
20	2670	2160	2010	1880	1750
25	2690	2180	2040	1900	1780
30	2720	2210	2060	1920	1800
35	2750	2230	2090	1950	1820
40	2780	2260	2110	1970	1840
45	2810	2280	2130	1990	1860
50	2830	2310	2160	2020	1880

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
 TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 6 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
3000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS			VAPP = 117 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3630	2890	2690	2510	2330
-25	3700	2940	2740	2550	2370
-20	3760	2990	2790	2600	2420
-15	3820	3050	2840	2640	2460
-10	3890	3100	2880	2690	2500
-5	3950	3150	2930	2730	2540
0	4020	3200	2980	2780	2590
5	4090	3250	3030	2820	2630
10	4150	3310	3080	2870	2680
15	4220	3360	3130	2920	2720
20	4290	3420	3180	2970	2760
25	4370	3470	3240	3010	2810
30	4440	3530	3290	3060	2860
35	4510	3590	3340	3110	2900
40	4590	3640	3390	3160	2950
45	4660	3700	3450	3210	3000

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS			VAPP = 113 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3360	2690	2510	2340	2170
-25	3420	2740	2550	2380	2210
-20	3470	2780	2590	2420	2250
-15	3530	2830	2640	2460	2290
-10	3580	2870	2680	2500	2330
-5	3640	2920	2720	2540	2360
0	3690	2960	2760	2580	2400
5	3750	3010	2810	2620	2440
10	3800	3050	2850	2660	2480
15	3860	3100	2890	2700	2520
20	3920	3150	2940	2740	2560
25	3980	3200	2980	2790	2600
30	4040	3240	3030	2830	2640
35	4100	3290	3070	2870	2680
40	4160	3340	3120	2910	2720
45	4220	3390	3170	2960	2760
48	4270	3430	3200	2990	2790

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS			VAPP = 112 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3320	2660	2480	2310	2150
-25	3370	2700	2520	2350	2180
-20	3420	2740	2560	2390	2220
-15	3480	2790	2600	2420	2260
-10	3530	2830	2640	2460	2300
-5	3580	2880	2680	2500	2330
0	3640	2920	2730	2540	2370
5	3690	2970	2770	2580	2410
10	3750	3010	2810	2620	2450
15	3800	3060	2850	2660	2490
20	3860	3100	2900	2700	2520
25	3910	3150	2940	2750	2560
30	3970	3190	2980	2790	2600
35	4030	3240	3030	2830	2640
40	4090	3290	3070	2870	2680
45	4150	3340	3120	2910	2720
48	4190	3370	3150	2940	2750

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS			VAPP = 110 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3210	2570	2400	2230	2080
-25	3260	2610	2440	2270	2110
-20	3310	2650	2480	2310	2150
-15	3350	2700	2520	2350	2180
-10	3400	2740	2550	2380	2220
-5	3450	2780	2590	2420	2260
0	3500	2820	2630	2460	2290
5	3550	2860	2670	2500	2330
10	3600	2900	2710	2530	2360
15	3660	2950	2750	2570	2400
20	3710	2990	2790	2610	2440
25	3760	3030	2830	2650	2470
30	3810	3080	2880	2690	2510
35	3870	3120	2920	2730	2550
40	3920	3170	2960	2770	2580
45	3980	3210	3000	2810	2620
48	4020	3240	3030	2830	2650

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS			VAPP = 109 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3100	2490	2320	2160	2010
-25	3150	2530	2360	2200	2050
-20	3190	2570	2400	2230	2080
-15	3240	2610	2430	2270	2110
-10	3280	2650	2470	2300	2150
-5	3330	2680	2510	2340	2180
0	3380	2720	2540	2370	2210
5	3420	2760	2580	2410	2250
10	3470	2800	2620	2450	2280
15	3520	2840	2660	2480	2320
20	3570	2880	2700	2520	2350
25	3620	2920	2730	2550	2390
30	3660	2960	2770	2590	2420
35	3710	3010	2810	2630	2460
40	3760	3050	2850	2670	2490
45	3810	3090	2890	2700	2530
48	3850	3120	2920	2730	2550

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS			VAPP = 107 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS	20 KTS	30 KTS
-30	3000	2410	2250	2090	1950
-25	3040	2450	2280	2130	1980
-20	3090	2480	2320	2160	2010
-15	3130	2520	2350	2190	2040
-10	3170	2560	2390	2230	2070
-5	3210	2590	2420	2260	2110
0	3260	2630	2460	2290	2140
5	3300	2670	2490	2330	2170
10	3340	2700	2530	2360	2200
15	3390	2740	2560	2400	2240
20	3430	2780	2600	2430	2270
25	3480	2820	2640	2460	2300
30	3520	2860	2670	2500	2330
35	3570	2890	2710	2530	2370
40	3620	2930	2750	2570	2400
45	3660	2970	2780	2600	2430
48	3700	3000	2810	2630	2460

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.

Figure 4-37 (Sheet 7 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
3000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS		VAPP = 105 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2900	2330	2170	2020	1880
-25	2940	2370	2210	2060	1910
-20	2980	2400	2240	2090	1940
-15	3020	2440	2270	2120	1970
-10	3060	2470	2310	2150	2000
-5	3100	2500	2340	2180	2030
0	3140	2540	2370	2220	2070
5	3180	2570	2410	2250	2100
10	3220	2610	2440	2280	2130
15	3260	2640	2470	2310	2160
20	3310	2680	2510	2340	2190
25	3350	2720	2540	2380	2220
30	3390	2750	2580	2410	2250
35	3430	2790	2610	2440	2280
40	3480	2820	2640	2470	2310
45	3520	2860	2680	2510	2340
48	3550	2890	2700	2530	2370

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS		VAPP = 103 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2810	2260	2100	1960	1820
-25	2840	2290	2130	1990	1850
-20	2880	2320	2170	2020	1880
-15	2920	2350	2200	2050	1910
-10	2960	2390	2230	2080	1930
-5	2990	2420	2260	2110	1960
0	3030	2450	2290	2140	1990
5	3070	2480	2320	2170	2020
10	3110	2520	2350	2200	2050
15	3150	2550	2390	2230	2080
20	3180	2580	2420	2260	2110
25	3220	2620	2450	2290	2140
30	3260	2650	2480	2320	2170
35	3300	2680	2510	2350	2200
40	3340	2720	2550	2380	2230
45	3380	2750	2580	2410	2260
48	3410	2780	2600	2440	2280

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS		VAPP = 101 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2720	2180	2030	1890	1760
-25	2750	2210	2060	1920	1780
-20	2790	2240	2090	1950	1810
-15	2820	2270	2120	1980	1840
-10	2860	2300	2150	2010	1870
-5	2890	2330	2180	2030	1890
0	2930	2370	2210	2060	1920
5	2960	2400	2240	2090	1950
10	3000	2430	2270	2120	1980
15	3030	2460	2300	2150	2000
20	3070	2490	2330	2180	2030
25	3100	2520	2360	2210	2060
30	3140	2550	2390	2230	2090
35	3180	2580	2420	2260	2110
40	3210	2620	2450	2290	2140
45	3250	2650	2480	2320	2170
48	3280	2670	2500	2340	2190

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS		VAPP = 99 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2630	2110	1960	1830	1700
-25	2660	2140	1990	1850	1720
-20	2690	2160	2020	1880	1750
-15	2720	2190	2050	1910	1770
-10	2760	2220	2070	1930	1800
-5	2790	2250	2100	1960	1820
0	2820	2280	2130	1990	1850
5	2860	2310	2160	2010	1880
10	2890	2340	2190	2040	1900
15	2920	2370	2210	2070	1930
20	2950	2400	2240	2100	1950
25	2990	2430	2270	2120	1980
30	3020	2460	2300	2150	2010
35	3060	2490	2330	2180	2030
40	3090	2520	2360	2210	2060
45	3130	2550	2390	2230	2090
48	3150	2570	2410	2250	2110

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS		VAPP = 97 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2540	2030	1890	1760	1640
-25	2570	2060	1920	1790	1670
-20	2600	2090	1950	1810	1690
-15	2630	2110	1970	1840	1710
-10	2660	2140	2000	1860	1740
-5	2690	2170	2020	1890	1760
0	2720	2200	2050	1910	1780
5	2750	2220	2080	1940	1800
10	2780	2250	2100	1960	1830
15	2810	2280	2130	1990	1850
20	2840	2310	2160	2010	1880
25	2870	2330	2180	2040	1900
30	2910	2360	2210	2070	1930
35	2940	2390	2240	2090	1950
40	2970	2420	2260	2120	1980
45	3000	2450	2290	2140	2000
48	3020	2470	2310	2160	2020

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS		VAPP = 95 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2450	1960	1830	1710	1590
-25	2480	1990	1850	1730	1610
-20	2510	2010	1870	1750	1630
-15	2530	2040	1900	1770	1650
-10	2560	2060	1920	1800	1670
-5	2590	2090	1950	1820	1700
0	2620	2110	1970	1840	1720
5	2650	2140	2000	1860	1740
10	2680	2160	2020	1890	1760
15	2710	2190	2050	1910	1780
20	2740	2220	2070	1930	1810
25	2760	2240	2100	1960	1830
30	2790	2270	2120	1980	1850
35	2820	2290	2150	2010	1870
40	2850	2320	2170	2030	1890
45	2880	2350	2200	2060	1920
48	2900	2370	2220	2070	1930

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 8 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS			VAPP = 117 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3760	2990	2790	2590	2410
-25	3830	3050	2840	2640	2460
-20	3890	3100	2890	2690	2500
-15	3960	3150	2940	2740	2550
-10	4030	3210	2990	2780	2590
-5	4100	3260	3040	2830	2640
0	4170	3320	3090	2880	2680
5	4240	3380	3140	2930	2730
10	4320	3430	3200	2980	2780
15	4390	3490	3250	3030	2820
20	4470	3550	3310	3080	2870
25	4540	3610	3360	3130	2920
30	4620	3670	3420	3180	2970
35	4700	3730	3470	3240	3020
40	4780	3790	3530	3290	3070
41	4810	3810	3550	3310	3080

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS			VAPP = 113 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3470	2780	2590	2420	2250
-25	3530	2830	2640	2460	2290
-20	3590	2870	2680	2500	2330
-15	3640	2920	2720	2540	2370
-10	3700	2970	2770	2580	2410
-5	3760	3020	2810	2630	2450
0	3820	3060	2860	2670	2490
5	3880	3110	2910	2710	2530
10	3940	3160	2950	2750	2570
15	4000	3210	3000	2800	2610
20	4060	3260	3040	2840	2650
25	4120	3310	3090	2890	2700
30	4190	3360	3140	2930	2740
35	4250	3410	3190	2980	2780
40	4320	3470	3240	3020	2820
45	4380	3520	3290	3070	2870
46	4410	3530	3300	3080	2880

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS			VAPP = 112 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3420	2740	2560	2380	2220
-25	3480	2790	2600	2420	2260
-20	3530	2840	2640	2470	2300
-15	3590	2880	2690	2510	2340
-10	3650	2930	2730	2550	2380
-5	3700	2970	2780	2590	2420
0	3760	3020	2820	2630	2450
5	3820	3070	2860	2670	2490
10	3880	3120	2910	2720	2530
15	3940	3160	2950	2760	2570
20	4000	3210	3000	2800	2620
25	4060	3260	3050	2840	2660
30	4120	3310	3090	2890	2700
35	4180	3360	3140	2930	2740
40	4240	3410	3190	2980	2780
45	4310	3460	3230	3020	2820
46	4330	3480	3250	3040	2840

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS			VAPP = 110 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3310	2650	2480	2310	2150
-25	3360	2700	2520	2350	2190
-20	3410	2740	2560	2390	2220
-15	3460	2780	2600	2420	2260
-10	3510	2830	2640	2460	2300
-5	3570	2870	2680	2500	2330
0	3620	2910	2720	2540	2370
5	3670	2960	2760	2580	2410
10	3730	3000	2810	2620	2450
15	3780	3050	2850	2660	2480
20	3840	3090	2890	2700	2520
25	3890	3140	2930	2740	2560
30	3950	3190	2980	2780	2600
35	4000	3230	3020	2820	2640
40	4060	3280	3070	2870	2680
45	4120	3330	3110	2910	2720
46	4140	3340	3120	2920	2730

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS			VAPP = 109 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3190	2570	2400	2230	2080
-25	3240	2610	2430	2270	2110
-20	3290	2650	2470	2310	2150
-15	3340	2690	2510	2340	2180
-10	3390	2730	2550	2380	2220
-5	3440	2770	2590	2420	2250
0	3480	2810	2630	2450	2290
5	3530	2850	2670	2490	2330
10	3580	2900	2710	2530	2360
15	3630	2940	2750	2570	2400
20	3690	2980	2790	2610	2430
25	3740	3020	2830	2640	2470
30	3790	3070	2870	2680	2510
35	3840	3110	2910	2720	2540
40	3890	3150	2950	2760	2580
45	3950	3200	2990	2800	2620
46	3960	3210	3000	2810	2630

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS			VAPP = 107 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3090	2480	2320	2160	2010
-25	3130	2520	2350	2190	2040
-20	3180	2560	2390	2230	2080
-15	3220	2600	2430	2260	2110
-10	3270	2640	2460	2300	2140
-5	3310	2680	2500	2330	2180
0	3360	2710	2540	2370	2210
5	3400	2750	2570	2400	2240
10	3450	2790	2610	2440	2280
15	3500	2830	2650	2480	2310
20	3540	2870	2690	2510	2350
25	3590	2910	2720	2550	2380
30	3640	2950	2760	2580	2420
35	3690	2990	2800	2620	2450
40	3740	3030	2840	2660	2480
45	3790	3070	2880	2690	2520
46	3800	3090	2890	2710	2530

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 9 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS		VAPP = 105 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2980	2400	2240	2090	1940
-25	3020	2440	2270	2120	1970
-20	3070	2470	2310	2150	2010
-15	3110	2510	2340	2190	2040
-10	3150	2550	2380	2220	2070
-5	3190	2580	2410	2250	2100
0	3240	2620	2450	2290	2130
5	3280	2650	2480	2320	2170
10	3320	2690	2520	2350	2200
15	3360	2730	2550	2390	2230
20	3410	2770	2590	2420	2260
25	3450	2800	2620	2450	2290
30	3500	2840	2660	2490	2330
35	3540	2880	2700	2520	2360
40	3590	2920	2730	2560	2390
45	3630	2960	2770	2590	2430
46	3650	2970	2780	2600	2440

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS		VAPP = 103 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2880	2320	2170	2020	1880
-25	2920	2360	2200	2050	1910
-20	2960	2390	2230	2080	1940
-15	3000	2420	2260	2110	1970
-10	3040	2460	2300	2140	2000
-5	3080	2490	2330	2170	2030
0	3120	2530	2360	2210	2060
5	3160	2560	2390	2240	2090
10	3200	2590	2430	2270	2120
15	3240	2630	2460	2300	2150
20	3280	2660	2490	2330	2180
25	3320	2700	2530	2360	2210
30	3360	2730	2560	2400	2240
35	3400	2770	2600	2430	2270
40	3450	2810	2630	2460	2300
45	3490	2840	2660	2490	2330
46	3500	2850	2670	2500	2340

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS		VAPP = 101 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2790	2240	2090	1950	1810
-25	2820	2280	2120	1980	1840
-20	2860	2310	2150	2010	1870
-15	2900	2340	2180	2040	1900
-10	2930	2370	2220	2070	1930
-5	2970	2400	2250	2100	1950
0	3010	2440	2280	2130	1980
5	3040	2470	2310	2160	2010
10	3080	2500	2340	2190	2040
15	3120	2530	2370	2220	2070
20	3160	2570	2400	2250	2100
25	3190	2600	2430	2280	2130
30	3230	2630	2470	2310	2160
35	3270	2670	2500	2340	2180
40	3310	2700	2530	2370	2210
45	3350	2730	2560	2400	2240
46	3360	2740	2570	2410	2250

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS		VAPP = 99 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2690	2170	2020	1880	1750
-25	2730	2200	2050	1910	1770
-20	2760	2230	2080	1940	1800
-15	2800	2260	2110	1960	1830
-10	2830	2290	2140	1990	1850
-5	2860	2320	2170	2020	1880
0	2900	2350	2190	2050	1910
5	2930	2380	2220	2080	1940
10	2970	2410	2250	2100	1960
15	3000	2440	2280	2130	1990
20	3040	2470	2310	2160	2020
25	3070	2500	2340	2190	2040
30	3110	2530	2370	2220	2070
35	3140	2560	2400	2250	2100
40	3180	2590	2430	2280	2130
45	3220	2630	2460	2300	2160
46	3230	2640	2470	2310	2160

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS		VAPP = 97 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2600	2090	1950	1810	1690
-25	2630	2120	1970	1840	1710
-20	2660	2150	2000	1860	1740
-15	2700	2170	2030	1890	1760
-10	2730	2200	2060	1920	1790
-5	2760	2230	2080	1940	1810
0	2790	2260	2110	1970	1830
5	2820	2290	2140	2000	1860
10	2860	2320	2170	2020	1880
15	2890	2350	2190	2050	1910
20	2920	2370	2220	2080	1940
25	2950	2400	2250	2100	1960
30	2990	2430	2280	2130	1990
35	3020	2460	2310	2160	2010
40	3050	2490	2330	2180	2040
45	3090	2520	2360	2210	2070
46	3100	2530	2370	2220	2070

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS		VAPP = 95 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-30	2510	2010	1880	1750	1630
-25	2540	2040	1900	1780	1650
-20	2570	2070	1930	1800	1680
-15	2600	2090	1950	1820	1700
-10	2630	2120	1980	1850	1720
-5	2660	2150	2000	1870	1750
0	2690	2170	2030	1890	1770
5	2720	2200	2060	1920	1790
10	2750	2230	2080	1940	1810
15	2780	2250	2110	1970	1840
20	2810	2280	2130	1990	1860
25	2840	2310	2160	2020	1880
30	2870	2330	2190	2040	1910
35	2900	2360	2210	2070	1930
40	2930	2390	2240	2090	1950
45	2960	2420	2270	2120	1980
46	2970	2430	2270	2130	1990

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 10 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★ WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3820	3040	2830	2640	2450
-30	3890	3100	2890	2690	2500
-25	3970	3160	2940	2740	2550
-20	4040	3210	2990	2790	2590
-15	4110	3270	3050	2840	2640
-10	4180	3330	3100	2890	2690
-5	4260	3390	3150	2940	2740
0	4330	3450	3210	2990	2790
5	4410	3510	3270	3040	2830
10	4490	3570	3320	3090	2880
15	4570	3630	3380	3150	2930
20	4650	3690	3440	3200	2980
25	4730	3750	3500	3260	3030
30	4820	3820	3550	3310	3090
35	4900	3880	3610	3370	3140
37	4960	3920	3650	3400	3170

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3530	2820	2630	2450	2290
-30	3590	2870	2680	2500	2330
-25	3650	2920	2730	2540	2370
-20	3710	2970	2770	2590	2410
-15	3770	3020	2820	2630	2450
-10	3830	3070	2870	2670	2490
-5	3890	3120	2910	2720	2540
0	3960	3170	2960	2760	2580
5	4020	3220	3010	2810	2620
10	4080	3280	3060	2860	2660
15	4150	3330	3110	2900	2710
20	4210	3380	3160	2950	2750
25	4280	3440	3210	2990	2800
30	4350	3490	3260	3040	2840
35	4420	3540	3310	3090	2890
40	4490	3600	3360	3140	2930
44	4550	3650	3410	3180	2970

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3480	2790	2600	2420	2260
-30	3540	2830	2640	2470	2300
-25	3590	2880	2690	2510	2340
-20	3650	2930	2740	2550	2380
-15	3710	2980	2780	2590	2420
-10	3770	3030	2830	2640	2460
-5	3830	3080	2870	2680	2500
0	3890	3130	2920	2730	2540
5	3950	3180	2970	2770	2580
10	4020	3230	3010	2810	2630
15	4080	3280	3060	2860	2670
20	4140	3330	3110	2900	2710
25	4210	3380	3160	2950	2760
30	4270	3430	3210	3000	2800
35	4340	3490	3260	3040	2840
40	4410	3540	3310	3090	2890
44	4470	3590	3350	3130	2930

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3360	2700	2510	2340	2180
-30	3410	2740	2560	2380	2220
-25	3460	2790	2600	2430	2260
-20	3520	2830	2640	2470	2300
-15	3570	2880	2690	2510	2340
-10	3630	2920	2730	2550	2380
-5	3680	2970	2770	2590	2420
0	3740	3010	2820	2630	2460
5	3800	3060	2860	2670	2490
10	3850	3110	2900	2710	2530
15	3910	3160	2950	2760	2570
20	3970	3200	2990	2800	2610
25	4030	3250	3040	2840	2650
30	4090	3300	3090	2880	2700
35	4150	3350	3130	2930	2740
40	4210	3400	3180	2970	2780
44	4270	3450	3220	3010	2820

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3240	2610	2430	2270	2110
-30	3290	2650	2470	2310	2150
-25	3340	2690	2510	2340	2180
-20	3390	2730	2550	2380	2220
-15	3440	2780	2590	2420	2260
-10	3490	2820	2630	2460	2300
-5	3550	2860	2680	2500	2330
0	3600	2910	2720	2540	2370
5	3650	2950	2760	2580	2410
10	3700	2990	2800	2620	2440
15	3760	3040	2840	2660	2480
20	3810	3080	2880	2700	2520
25	3870	3130	2930	2740	2560
30	3920	3170	2970	2780	2600
35	3980	3220	3010	2820	2640
40	4030	3270	3060	2860	2670
44	4080	3310	3100	2900	2710

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3130	2520	2350	2190	2040
-30	3180	2560	2390	2230	2080
-25	3220	2600	2430	2270	2110
-20	3270	2640	2470	2300	2150
-15	3320	2680	2500	2340	2180
-10	3370	2720	2540	2380	2220
-5	3420	2760	2580	2410	2250
0	3460	2800	2620	2450	2290
5	3510	2840	2660	2490	2320
10	3560	2880	2700	2520	2360
15	3610	2930	2740	2560	2390
20	3660	2970	2780	2600	2430
25	3710	3010	2820	2640	2460
30	3760	3050	2860	2670	2500
35	3810	3100	2900	2710	2540
40	3860	3140	2940	2750	2570
44	3910	3180	2980	2790	2610

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 11 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3030	2440	2270	2120	1970
-30	3070	2470	2310	2150	2010
-25	3110	2510	2350	2190	2040
-20	3160	2550	2380	2220	2070
-15	3200	2590	2420	2260	2110
-10	3250	2630	2450	2290	2140
-5	3290	2660	2490	2330	2170
0	3330	2700	2530	2360	2200
5	3380	2740	2560	2400	2240
10	3420	2780	2600	2430	2270
15	3470	2820	2640	2470	2310
20	3520	2860	2670	2500	2340
25	3560	2900	2710	2540	2370
30	3610	2940	2750	2570	2410
35	3660	2980	2790	2610	2440
40	3710	3020	2830	2650	2480
44	3750	3050	2860	2680	2510

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2920	2350	2200	2050	1910
-30	2960	2390	2230	2080	1940
-25	3010	2430	2270	2110	1970
-20	3050	2460	2300	2150	2000
-15	3090	2500	2330	2180	2030
-10	3130	2530	2370	2210	2060
-5	3170	2570	2400	2240	2090
0	3210	2600	2440	2280	2130
5	3250	2640	2470	2310	2160
10	3300	2680	2510	2340	2190
15	3340	2710	2540	2380	2220
20	3380	2750	2580	2410	2250
25	3420	2790	2610	2440	2280
30	3470	2820	2650	2480	2320
35	3510	2860	2680	2510	2350
40	3560	2900	2720	2550	2380
44	3600	2930	2750	2580	2410

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2830	2280	2120	1980	1840
-30	2860	2310	2150	2010	1870
-25	2900	2340	2190	2040	1900
-20	2940	2380	2220	2070	1930
-15	2980	2410	2250	2100	1960
-10	3020	2440	2280	2130	1990
-5	3060	2480	2320	2160	2020
0	3090	2510	2350	2190	2050
5	3130	2540	2380	2220	2080
10	3170	2580	2410	2260	2110
15	3210	2610	2450	2290	2140
20	3250	2650	2480	2320	2170
25	3290	2680	2510	2350	2200
30	3330	2720	2540	2380	2230
35	3370	2750	2580	2410	2260
40	3410	2790	2610	2450	2290
44	3450	2820	2640	2480	2320

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2730	2200	2050	1910	1770
-30	2760	2230	2080	1940	1800
-25	2800	2260	2110	1970	1830
-20	2840	2290	2140	2000	1860
-15	2870	2320	2170	2020	1890
-10	2910	2350	2200	2050	1910
-5	2940	2390	2230	2080	1940
0	2980	2420	2260	2110	1970
5	3020	2450	2290	2140	2000
10	3050	2480	2320	2170	2030
15	3090	2510	2350	2200	2050
20	3130	2550	2380	2230	2080
25	3160	2580	2410	2260	2110
30	3200	2610	2450	2290	2140
35	3240	2640	2480	2320	2170
40	3280	2680	2510	2350	2200
44	3310	2710	2540	2380	2220

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2630	2120	1970	1840	1710
-30	2670	2150	2000	1860	1740
-25	2700	2180	2030	1890	1760
-20	2730	2210	2060	1920	1790
-15	2770	2240	2090	1950	1810
-10	2800	2270	2120	1980	1840
-5	2830	2300	2150	2000	1870
0	2870	2330	2170	2030	1890
5	2900	2350	2200	2060	1920
10	2940	2380	2230	2090	1950
15	2970	2420	2260	2110	1970
20	3000	2450	2290	2140	2000
25	3040	2480	2320	2170	2030
30	3070	2510	2350	2200	2050
35	3110	2540	2380	2230	2080
40	3140	2570	2410	2250	2110
44	3170	2600	2430	2280	2130

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2540	2040	1900	1780	1650
-30	2570	2070	1930	1800	1680
-25	2600	2100	1950	1820	1700
-20	2630	2120	1980	1850	1730
-15	2670	2150	2010	1870	1750
-10	2700	2180	2040	1900	1770
-5	2730	2210	2060	1920	1800
0	2760	2240	2090	1950	1820
5	2790	2260	2120	1980	1840
10	2820	2290	2140	2000	1870
15	2850	2320	2170	2030	1890
20	2890	2350	2200	2050	1920
25	2920	2380	2220	2080	1940
30	2950	2400	2250	2110	1970
35	2980	2430	2280	2130	1990
40	3010	2460	2310	2160	2020
44	3040	2490	2330	2180	2040

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
 TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 12 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
6000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3960	3150	2940	2730	2540
-30	4040	3210	2990	2790	2590
-25	4110	3270	3050	2840	2640
-20	4190	3330	3100	2890	2690
-15	4270	3390	3160	2940	2740
-10	4350	3460	3220	3000	2790
-5	4430	3520	3280	3050	2840
0	4510	3580	3330	3110	2890
5	4590	3650	3390	3160	2950
10	4680	3710	3450	3220	3000
15	4760	3780	3520	3270	3050
20	4850	3840	3580	3330	3100
25	4940	3910	3640	3390	3160
30	5030	3980	3700	3450	3210
34	5110	4040	3760	3500	3260

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3650	2920	2720	2540	2370
-30	3710	2970	2770	2590	2410
-25	3770	3020	2820	2630	2450
-20	3840	3080	2870	2680	2500
-15	3900	3130	2920	2720	2540
-10	3970	3180	2970	2770	2590
-5	4030	3240	3020	2820	2630
0	4100	3290	3070	2870	2670
5	4170	3340	3120	2910	2720
10	4240	3400	3170	2960	2770
15	4310	3450	3220	3010	2810
20	4380	3510	3280	3060	2860
25	4450	3570	3330	3110	2900
30	4520	3630	3380	3160	2950
35	4600	3680	3440	3210	3000
40	4670	3740	3490	3260	3050
41	4700	3760	3510	3280	3060

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3590	2880	2690	2510	2330
-30	3650	2930	2740	2550	2380
-25	3720	2980	2780	2600	2420
-20	3780	3030	2830	2640	2460
-15	3840	3080	2880	2690	2510
-10	3900	3140	2930	2730	2550
-5	3970	3190	2980	2780	2590
0	4030	3240	3030	2820	2640
5	4100	3290	3070	2870	2680
10	4170	3350	3130	2920	2720
15	4230	3400	3180	2970	2770
20	4300	3460	3230	3010	2820
25	4370	3510	3280	3060	2860
30	4440	3570	3330	3110	2910
35	4510	3620	3380	3160	2950
40	4580	3680	3440	3210	3000
42	4620	3710	3460	3240	3020

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3460	2780	2600	2420	2260
-30	3520	2830	2640	2470	2300
-25	3580	2880	2690	2510	2340
-20	3640	2930	2730	2550	2380
-15	3690	2970	2780	2590	2420
-10	3750	3020	2820	2640	2460
-5	3810	3070	2870	2680	2500
0	3870	3120	2920	2720	2540
5	3930	3170	2960	2770	2580
10	3990	3220	3010	2810	2630
15	4050	3270	3060	2860	2670
20	4120	3320	3100	2900	2710
25	4180	3370	3150	2950	2750
30	4240	3420	3200	2990	2800
35	4310	3480	3250	3040	2840
40	4380	3530	3300	3080	2880
42	4410	3560	3320	3110	2910

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3340	2690	2510	2340	2180
-30	3390	2730	2550	2380	2220
-25	3450	2780	2600	2420	2260
-20	3500	2820	2640	2460	2300
-15	3560	2870	2680	2500	2340
-10	3610	2920	2720	2550	2380
-5	3660	2960	2770	2590	2410
0	3720	3010	2810	2630	2450
5	3770	3050	2850	2670	2490
10	3830	3100	2900	2710	2530
15	3890	3150	2940	2750	2570
20	3940	3190	2990	2790	2610
25	4000	3240	3030	2840	2650
30	4060	3290	3080	2880	2690
35	4120	3340	3120	2920	2730
40	4180	3390	3170	2970	2770
42	4210	3410	3190	2990	2800

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3230	2600	2430	2260	2110
-30	3270	2640	2470	2300	2150
-25	3320	2680	2510	2340	2180
-20	3370	2730	2550	2380	2220
-15	3420	2770	2590	2420	2260
-10	3470	2810	2630	2460	2290
-5	3520	2850	2670	2490	2330
0	3580	2900	2710	2530	2370
5	3630	2940	2750	2570	2400
10	3680	2980	2790	2610	2440
15	3730	3030	2830	2650	2480
20	3780	3070	2870	2690	2510
25	3840	3110	2920	2730	2550
30	3890	3160	2960	2770	2590
35	3950	3200	3000	2810	2630
40	4000	3250	3040	2850	2670
42	4030	3270	3070	2870	2690

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 13 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
6000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3110	2510	2350	2190	2040
-30	3160	2550	2380	2220	2070
-25	3210	2590	2420	2260	2110
-20	3250	2630	2460	2300	2140
-15	3300	2670	2500	2330	2180
-10	3350	2710	2530	2370	2210
-5	3390	2750	2570	2400	2250
0	3440	2790	2610	2440	2280
5	3490	2830	2650	2480	2310
10	3530	2870	2690	2510	2350
15	3580	2910	2730	2550	2390
20	3630	2950	2770	2590	2420
25	3680	2990	2800	2630	2460
30	3730	3040	2840	2660	2490
35	3780	3080	2880	2700	2530
40	3830	3120	2920	2740	2560
42	3860	3140	2950	2760	2580

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3010	2430	2270	2110	1970
-30	3050	2460	2300	2150	2000
-25	3090	2500	2340	2180	2030
-20	3140	2540	2370	2210	2070
-15	3180	2570	2410	2250	2100
-10	3220	2610	2440	2280	2130
-5	3270	2650	2480	2320	2160
0	3310	2690	2520	2350	2200
5	3350	2720	2550	2390	2230
10	3400	2760	2590	2420	2260
15	3440	2800	2620	2460	2300
20	3490	2840	2660	2490	2330
25	3530	2880	2700	2530	2360
30	3580	2920	2730	2560	2400
35	3630	2960	2770	2600	2430
40	3670	3000	2810	2630	2460
42	3700	3020	2830	2650	2480

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2900	2340	2190	2040	1900
-30	2940	2380	2220	2070	1930
-25	2980	2410	2250	2100	1960
-20	3020	2450	2290	2140	1990
-15	3060	2480	2320	2170	2020
-10	3100	2520	2360	2200	2050
-5	3140	2550	2390	2230	2080
0	3190	2590	2420	2260	2110
5	3230	2620	2460	2300	2150
10	3270	2660	2490	2330	2180
15	3310	2690	2520	2360	2210
20	3350	2730	2560	2400	2240
25	3390	2770	2590	2430	2270
30	3430	2800	2630	2460	2300
35	3480	2840	2660	2500	2340
40	3520	2880	2700	2530	2370
42	3540	2900	2720	2550	2380

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2800	2260	2110	1970	1830
-30	2840	2290	2140	2000	1860
-25	2880	2330	2170	2030	1890
-20	2920	2360	2200	2060	1920
-15	2950	2390	2240	2090	1950
-10	2990	2430	2270	2120	1980
-5	3030	2460	2300	2150	2000
0	3070	2490	2330	2180	2030
5	3100	2520	2360	2210	2060
10	3140	2560	2400	2240	2090
15	3180	2590	2430	2270	2120
20	3220	2620	2460	2300	2150
25	3260	2660	2490	2330	2180
30	3300	2690	2520	2360	2210
35	3340	2730	2560	2400	2240
40	3380	2760	2590	2430	2270
42	3400	2780	2610	2440	2290

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2700	2180	2030	1890	1760
-30	2740	2210	2060	1920	1790
-25	2770	2240	2090	1950	1820
-20	2810	2270	2120	1980	1840
-15	2840	2300	2150	2010	1870
-10	2880	2330	2180	2040	1900
-5	2910	2360	2210	2060	1930
0	2950	2390	2240	2090	1950
5	2980	2430	2270	2120	1980
10	3020	2460	2300	2150	2010
15	3050	2490	2330	2180	2040
20	3090	2520	2360	2210	2060
25	3130	2550	2390	2240	2090
30	3160	2580	2420	2270	2120
35	3200	2620	2450	2300	2150
40	3240	2650	2480	2330	2180
42	3250	2660	2500	2340	2190

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	2610	2100	1960	1830	1700
-30	2640	2130	1980	1850	1730
-25	2670	2160	2010	1880	1750
-20	2700	2180	2040	1900	1780
-15	2740	2210	2070	1930	1800
-10	2770	2240	2100	1960	1830
-5	2800	2270	2120	1980	1850
0	2830	2300	2150	2010	1870
5	2870	2330	2180	2040	1900
10	2900	2360	2210	2060	1930
15	2930	2390	2240	2090	1950
20	2970	2420	2260	2120	1980
25	3000	2450	2290	2150	2000
30	3030	2480	2320	2170	2030
35	3070	2510	2350	2200	2060
40	3100	2540	2380	2230	2080
42	3120	2550	2390	2240	2100

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
 TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 14 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
7000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★ WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4110	3270	3040	2840	2640
-30	4190	3330	3100	2890	2690
-25	4280	3400	3160	2950	2740
-20	4360	3460	3220	3000	2800
-15	4440	3530	3280	3060	2850
-10	4530	3590	3340	3120	2900
-5	4610	3660	3410	3170	2960
0	4700	3730	3470	3230	3010
5	4790	3800	3530	3290	3070
10	4880	3860	3600	3350	3120
15	4980	3940	3660	3410	3180
20	5070	4010	3730	3470	3230
25	5170	4080	3790	3530	3290
29	5270	4150	3860	3590	3350

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3770	3020	2820	2630	2450
-30	3840	3080	2870	2680	2500
-25	3910	3130	2920	2730	2540
-20	3980	3190	2970	2780	2590
-15	4050	3240	3030	2830	2640
-10	4120	3300	3080	2870	2680
-5	4190	3360	3130	2920	2730
0	4260	3410	3190	2970	2780
5	4330	3470	3240	3020	2820
10	4400	3530	3290	3080	2870
15	4480	3590	3350	3130	2920
20	4550	3650	3410	3180	2970
25	4630	3710	3460	3230	3020
30	4710	3770	3520	3290	3070
35	4790	3830	3580	3340	3120
37	4830	3860	3610	3370	3140

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3720	2980	2780	2590	2420
-30	3780	3030	2830	2640	2460
-25	3850	3090	2880	2690	2510
-20	3910	3140	2930	2740	2550
-15	3980	3200	2980	2780	2600
-10	4050	3250	3030	2830	2640
-5	4120	3310	3090	2880	2690
0	4180	3360	3140	2930	2740
5	4250	3420	3190	2980	2780
10	4330	3470	3240	3030	2830
15	4400	3530	3300	3080	2880
20	4470	3590	3350	3130	2920
25	4550	3650	3410	3180	2970
30	4620	3710	3460	3230	3020
35	4700	3770	3520	3290	3070
38	4760	3810	3560	3330	3110

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3580	2880	2690	2510	2340
-30	3640	2930	2730	2550	2380
-25	3700	2980	2780	2600	2420
-20	3760	3030	2830	2640	2460
-15	3820	3080	2880	2690	2510
-10	3880	3130	2920	2730	2550
-5	3950	3180	2970	2780	2590
0	4010	3230	3020	2820	2640
5	4070	3280	3070	2870	2680
10	4140	3340	3120	2920	2720
15	4210	3390	3170	2960	2770
20	4270	3440	3220	3010	2810
25	4340	3500	3270	3060	2860
30	4410	3550	3320	3110	2900
35	4480	3610	3370	3160	2950
40	4550	3670	3430	3200	3000

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3450	2780	2590	2420	2260
-30	3500	2830	2640	2460	2300
-25	3560	2870	2680	2510	2340
-20	3620	2920	2730	2550	2380
-15	3670	2970	2770	2590	2420
-10	3730	3010	2820	2630	2460
-5	3790	3060	2860	2680	2500
0	3850	3110	2910	2720	2540
5	3910	3160	2960	2760	2580
10	3970	3210	3000	2810	2620
15	4030	3260	3050	2850	2670
20	4090	3310	3100	2900	2710
25	4150	3360	3140	2940	2750
30	4210	3410	3190	2990	2790
35	4280	3460	3240	3030	2840
40	4340	3510	3290	3080	2880

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3330	2680	2510	2340	2180
-30	3380	2730	2550	2380	2220
-25	3430	2770	2590	2420	2260
-20	3480	2820	2630	2460	2300
-15	3530	2860	2670	2500	2330
-10	3590	2900	2720	2540	2370
-5	3640	2950	2760	2580	2410
0	3690	2990	2800	2620	2450
5	3750	3040	2840	2660	2490
10	3800	3090	2890	2700	2530
15	3860	3130	2930	2740	2570
20	3920	3180	2980	2790	2610
25	3970	3220	3020	2830	2650
30	4030	3270	3060	2870	2690
35	4090	3320	3110	2910	2730
40	4150	3370	3160	2960	2770

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 15 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
7000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3210	2590	2420	2260	2110
-30	3260	2630	2460	2300	2140
-25	3300	2670	2500	2330	2180
-20	3350	2710	2540	2370	2210
-15	3400	2760	2580	2410	2250
-10	3450	2800	2620	2450	2290
-5	3500	2840	2660	2490	2320
0	3550	2880	2700	2520	2360
5	3600	2920	2740	2560	2400
10	3650	2970	2780	2600	2430
15	3700	3010	2820	2640	2470
20	3750	3050	2860	2680	2510
25	3810	3100	2900	2720	2540
30	3860	3140	2940	2760	2580
35	3910	3190	2990	2800	2620
40	3970	3230	3030	2840	2660

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3090	2500	2340	2180	2030
-30	3140	2540	2370	2220	2070
-25	3180	2580	2410	2250	2100
-20	3230	2620	2450	2290	2130
-15	3280	2660	2490	2320	2170
-10	3320	2700	2520	2360	2200
-5	3370	2740	2560	2390	2240
0	3410	2770	2600	2430	2270
5	3460	2810	2640	2470	2310
10	3510	2850	2670	2500	2340
15	3550	2890	2710	2540	2380
20	3600	2930	2750	2580	2410
25	3650	2980	2790	2610	2450
30	3700	3020	2830	2650	2480
35	3750	3060	2870	2690	2520
40	3800	3100	2910	2730	2550

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2990	2410	2250	2100	1960
-30	3030	2450	2290	2140	1990
-25	3070	2490	2320	2170	2020
-20	3110	2520	2360	2200	2060
-15	3150	2560	2390	2240	2090
-10	3200	2600	2430	2270	2120
-5	3240	2630	2470	2310	2150
0	3280	2670	2500	2340	2190
5	3320	2710	2540	2370	2220
10	3370	2740	2570	2410	2250
15	3410	2780	2610	2440	2280
20	3450	2820	2640	2480	2320
25	3500	2860	2680	2510	2350
30	3540	2900	2720	2550	2380
35	3590	2930	2750	2580	2420
40	3630	2970	2790	2620	2450

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2880	2330	2170	2030	1890
-30	2920	2360	2210	2060	1920
-25	2960	2400	2240	2090	1950
-20	3000	2430	2270	2120	1980
-15	3040	2460	2310	2150	2010
-10	3080	2500	2340	2190	2040
-5	3120	2530	2370	2220	2070
0	3160	2570	2410	2250	2100
5	3200	2600	2440	2280	2130
10	3240	2640	2470	2310	2160
15	3280	2670	2510	2350	2190
20	3320	2710	2540	2380	2220
25	3360	2740	2570	2410	2250
30	3400	2780	2610	2440	2290
35	3440	2820	2640	2480	2320
40	3480	2850	2680	2510	2350

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2770	2240	2090	1950	1820
-30	2810	2270	2120	1980	1840
-25	2850	2310	2150	2010	1870
-20	2880	2340	2190	2040	1900
-15	2920	2370	2220	2070	1930
-10	2960	2400	2250	2100	1960
-5	2990	2440	2280	2130	1990
0	3030	2470	2310	2160	2020
5	3070	2500	2340	2190	2050
10	3110	2530	2370	2220	2070
15	3140	2570	2400	2250	2100
20	3180	2600	2440	2280	2130
25	3220	2630	2470	2310	2160
30	3260	2660	2500	2340	2190
35	3290	2700	2530	2370	2220
40	3330	2730	2560	2400	2250

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2670	2160	2010	1880	1750
-30	2710	2190	2040	1900	1780
-25	2740	2220	2070	1930	1800
-20	2780	2250	2100	1960	1830
-15	2810	2280	2130	1990	1850
-10	2840	2310	2160	2020	1880
-5	2880	2340	2190	2040	1910
0	2910	2370	2220	2070	1930
5	2950	2400	2250	2100	1960
10	2980	2430	2280	2130	1990
15	3020	2460	2310	2160	2020
20	3050	2490	2330	2190	2040
25	3080	2520	2360	2210	2070
30	3120	2550	2390	2240	2100
35	3160	2580	2420	2270	2130
40	3190	2620	2450	2300	2150

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
 TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 16 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
8000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS VREF = 111 KIAS VAPP = 117 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4270	3400	3160	2940	2740
-30	4360	3460	3220	3000	2800
-25	4450	3530	3290	3060	2850
-20	4540	3600	3350	3120	2910
-15	4630	3670	3410	3180	2960
-10	4720	3740	3480	3240	3020
-5	4810	3810	3550	3300	3080
0	4910	3880	3610	3360	3130
5	5010	3960	3680	3430	3190
10	5110	4030	3750	3490	3250
15	5210	4110	3820	3550	3310
20	5310	4180	3890	3620	3370
25	5420	4260	3960	3690	3430

WEIGHT = 15200 POUNDS VREF = 107 KIAS VAPP = 113 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3910	3130	2920	2730	2540
-30	3980	3190	2980	2780	2590
-25	4050	3250	3030	2830	2640
-20	4120	3310	3090	2880	2690
-15	4200	3370	3140	2930	2730
-10	4270	3420	3200	2980	2780
-5	4350	3490	3250	3040	2830
0	4430	3550	3310	3090	2880
5	4500	3610	3370	3140	2930
10	4580	3670	3420	3200	2980
15	4660	3730	3480	3250	3040
20	4750	3800	3540	3310	3090
25	4830	3860	3600	3360	3140
30	4910	3930	3660	3420	3190
33	4970	3970	3700	3460	3230

WEIGHT = 15000 POUNDS VREF = 106 KIAS VAPP = 112 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3850	3090	2880	2690	2510
-30	3920	3140	2930	2740	2550
-25	3990	3200	2990	2790	2600
-20	4060	3260	3040	2840	2650
-15	4130	3310	3090	2890	2700
-10	4200	3370	3150	2940	2740
-5	4270	3430	3200	2990	2790
0	4350	3490	3260	3040	2840
5	4420	3550	3310	3090	2890
10	4500	3610	3370	3150	2940
15	4580	3670	3430	3200	2990
20	4650	3730	3480	3250	3040
25	4730	3790	3540	3310	3090
30	4820	3860	3600	3360	3140
34	4890	3920	3660	3420	3190

WEIGHT = 14500 POUNDS VREF = 105 KIAS VAPP = 110 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3700	2980	2780	2600	2420
-30	3760	3030	2830	2640	2460
-25	3830	3080	2880	2690	2510
-20	3890	3140	2930	2740	2550
-15	3960	3190	2980	2780	2600
-10	4030	3240	3030	2830	2640
-5	4090	3300	3080	2880	2690
0	4160	3350	3130	2930	2740
5	4230	3410	3190	2980	2780
10	4300	3460	3240	3030	2830
15	4370	3520	3290	3080	2880
20	4440	3580	3340	3130	2920
25	4510	3630	3400	3180	2970
30	4590	3690	3450	3230	3020
35	4660	3750	3510	3280	3070
38	4710	3790	3540	3310	3100

WEIGHT = 14000 POUNDS VREF = 103 KIAS VAPP = 109 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3560	2870	2680	2510	2340
-30	3620	2920	2730	2550	2380
-25	3680	2970	2780	2590	2420
-20	3740	3020	2820	2640	2460
-15	3800	3070	2870	2680	2510
-10	3860	3120	2920	2730	2550
-5	3920	3170	2970	2770	2590
0	3990	3220	3010	2820	2640
5	4050	3270	3060	2860	2680
10	4110	3330	3110	2910	2720
15	4180	3380	3160	2960	2770
20	4240	3430	3210	3000	2810
25	4310	3480	3260	3050	2850
30	4370	3540	3310	3100	2900
35	4440	3590	3360	3150	2950
38	4490	3630	3400	3180	2980

WEIGHT = 13500 POUNDS VREF = 101 KIAS VAPP = 107 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3430	2770	2590	2420	2260
-30	3490	2820	2630	2460	2300
-25	3540	2860	2680	2500	2340
-20	3600	2910	2720	2540	2380
-15	3650	2960	2770	2590	2420
-10	3710	3000	2810	2630	2460
-5	3770	3050	2860	2670	2500
0	3820	3100	2900	2710	2540
5	3880	3150	2950	2760	2580
10	3940	3190	2990	2800	2620
15	4000	3240	3040	2840	2660
20	4060	3290	3080	2890	2700
25	4120	3340	3130	2930	2740
30	4180	3390	3180	2980	2790
35	4240	3440	3230	3020	2830
38	4280	3480	3260	3050	2860

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 17 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
8000 FEET

CONDITIONS: LANDING GEAR - DOWN ANTI-ICE SYSTEMS - ON OR OFF
SPEED BRAKES - EXTEND AFTER TOUCHDOWN THRUST - IDLE
AIRSPEED - VREF AT 50 FEET

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3310	2670	2500	2330	2180
-30	3360	2720	2540	2370	2210
-25	3410	2760	2580	2410	2250
-20	3460	2800	2620	2450	2290
-15	3510	2850	2670	2490	2330
-10	3560	2890	2710	2530	2370
-5	3620	2940	2750	2570	2400
0	3670	2980	2790	2610	2440
5	3720	3030	2830	2650	2480
10	3770	3070	2880	2690	2520
15	3830	3120	2920	2730	2560
20	3880	3160	2960	2770	2600
25	3940	3210	3010	2820	2640
30	3990	3250	3050	2860	2680
35	4050	3300	3090	2900	2720
38	4090	3330	3130	2930	2750

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3190	2580	2410	2250	2100
-30	3230	2620	2450	2290	2140
-25	3280	2660	2490	2330	2170
-20	3330	2700	2530	2360	2210
-15	3380	2740	2570	2400	2240
-10	3420	2780	2610	2440	2280
-5	3470	2830	2650	2480	2310
0	3520	2870	2690	2510	2350
5	3570	2910	2730	2550	2390
10	3620	2950	2760	2590	2420
15	3670	2990	2800	2630	2460
20	3720	3030	2850	2670	2500
25	3770	3080	2890	2700	2530
30	3820	3120	2930	2740	2570
35	3870	3160	2970	2780	2610
38	3910	3200	3000	2810	2630

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3070	2490	2320	2170	2020
-30	3120	2530	2360	2210	2060
-25	3160	2560	2400	2240	2090
-20	3200	2600	2440	2280	2130
-15	3250	2640	2470	2310	2160
-10	3290	2680	2510	2350	2190
-5	3340	2720	2550	2380	2230
0	3380	2760	2580	2420	2260
5	3430	2800	2620	2450	2290
10	3470	2830	2660	2490	2330
15	3520	2870	2690	2520	2360
20	3570	2910	2730	2560	2400
25	3610	2950	2770	2600	2430
30	3660	2990	2810	2630	2470
35	3710	3030	2850	2670	2500
38	3740	3060	2880	2700	2530

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2960	2400	2240	2090	1950
-30	3000	2430	2270	2120	1980
-25	3040	2470	2310	2160	2010
-20	3080	2500	2340	2190	2040
-15	3130	2540	2380	2220	2080
-10	3170	2580	2410	2260	2110
-5	3210	2610	2450	2290	2140
0	3250	2650	2480	2320	2170
5	3290	2690	2520	2360	2200
10	3330	2720	2550	2390	2240
15	3380	2760	2590	2420	2270
20	3420	2800	2620	2460	2300
25	3460	2830	2660	2490	2330
30	3510	2870	2690	2530	2370
35	3550	2910	2730	2560	2400
38	3580	2940	2760	2590	2420

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2850	2310	2160	2010	1870
-30	2890	2340	2190	2040	1900
-25	2930	2370	2220	2070	1930
-20	2970	2410	2250	2100	1960
-15	3000	2440	2290	2140	1990
-10	3040	2480	2320	2170	2020
-5	3080	2510	2350	2200	2050
0	3120	2540	2380	2230	2080
5	3160	2580	2420	2260	2110
10	3200	2610	2450	2290	2140
15	3240	2650	2480	2320	2170
20	3280	2680	2510	2360	2200
25	3320	2720	2550	2390	2240
30	3360	2750	2580	2420	2270
35	3400	2790	2610	2450	2300
38	3430	2810	2640	2480	2320

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2740	2220	2070	1930	1800
-30	2780	2250	2100	1960	1830
-25	2820	2280	2130	1990	1860
-20	2850	2310	2160	2020	1880
-15	2890	2350	2190	2050	1910
-10	2920	2380	2220	2080	1940
-5	2960	2410	2260	2110	1970
0	2990	2440	2290	2140	2000
5	3030	2470	2320	2170	2020
10	3070	2500	2350	2200	2050
15	3100	2540	2380	2230	2080
20	3140	2570	2410	2260	2110
25	3180	2600	2440	2290	2140
30	3210	2630	2470	2320	2170
35	3250	2670	2500	2350	2200
38	3280	2690	2530	2370	2220

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 18 of 30)

LANDING DISTANCE - FEET

ACTUAL DISTANCE

FLAPS - FULL
9000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4450	3530	3280	3060	2850
-30	4540	3600	3350	3120	2910
-25	4640	3670	3420	3180	2970
-20	4730	3750	3490	3250	3020
-15	4830	3820	3560	3310	3080
-10	4930	3900	3630	3380	3140
-5	5030	3970	3700	3440	3210
0	5140	4050	3770	3510	3270
5	5240	4130	3840	3570	3330
10	5350	4210	3910	3640	3390
15	5460	4290	3990	3710	3460
20	5570	4380	4060	3780	3520

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4050	3250	3030	2830	2640
-30	4130	3310	3090	2880	2690
-25	4210	3370	3140	2930	2740
-20	4280	3430	3200	2990	2790
-15	4360	3500	3260	3040	2840
-10	4440	3560	3320	3100	2890
-5	4530	3620	3380	3160	2950
0	4610	3690	3440	3210	3000
5	4690	3750	3500	3270	3050
10	4780	3820	3560	3330	3110
15	4860	3890	3630	3380	3160
20	4950	3950	3690	3440	3220
25	5040	4020	3750	3500	3270
28	5120	4080	3800	3550	3320

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3990	3200	2990	2790	2600
-30	4060	3260	3040	2840	2650
-25	4140	3320	3100	2890	2700
-20	4210	3380	3150	2940	2750
-15	4290	3440	3210	3000	2800
-10	4360	3500	3270	3050	2850
-5	4440	3560	3330	3110	2900
0	4520	3630	3390	3160	2950
5	4600	3690	3440	3220	3000
10	4680	3750	3500	3270	3060
15	4770	3820	3560	3330	3110
20	4850	3890	3630	3390	3160
25	4940	3950	3690	3440	3220
30	5030	4020	3750	3500	3270

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3830	3080	2880	2690	2510
-30	3900	3140	2930	2740	2560
-25	3970	3190	2980	2790	2600
-20	4040	3250	3040	2840	2650
-15	4110	3310	3090	2890	2700
-10	4180	3360	3140	2940	2740
-5	4250	3420	3200	2990	2790
0	4320	3480	3250	3040	2840
5	4390	3540	3310	3090	2890
10	4470	3600	3360	3140	2940
15	4540	3660	3420	3200	2990
20	4620	3720	3480	3250	3040
25	4700	3780	3530	3300	3090
30	4780	3840	3590	3360	3140
34	4840	3900	3640	3400	3180

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3680	2970	2780	2590	2420
-30	3750	3020	2830	2640	2460
-25	3810	3080	2880	2690	2510
-20	3870	3130	2920	2730	2550
-15	3940	3180	2970	2780	2600
-10	4000	3230	3020	2830	2640
-5	4070	3290	3080	2880	2690
0	4130	3340	3130	2920	2730
5	4200	3400	3180	2970	2780
10	4270	3450	3230	3020	2830
15	4340	3510	3280	3070	2870
20	4400	3560	3330	3120	2920
25	4480	3620	3390	3170	2970
30	4550	3680	3440	3220	3010
35	4620	3740	3500	3270	3060
36	4640	3750	3510	3290	3080

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3540	2860	2680	2500	2340
-30	3600	2910	2720	2550	2380
-25	3660	2960	2770	2590	2420
-20	3720	3010	2820	2630	2460
-15	3780	3060	2860	2680	2500
-10	3840	3110	2910	2720	2550
-5	3900	3160	2960	2770	2590
0	3960	3210	3010	2810	2630
5	4020	3260	3050	2860	2670
10	4080	3310	3100	2900	2720
15	4140	3360	3150	2950	2760
20	4210	3410	3200	3000	2800
25	4270	3470	3250	3040	2850
30	4340	3520	3300	3090	2890
35	4400	3570	3350	3140	2940
36	4420	3590	3360	3150	2950

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 19 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
9000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	3410	2760	2580 2410 2250		
-30	3460	2810	2630 2450 2290		
-25	3520	2850	2670 2500 2330		
-20	3570	2900	2710 2540 2370		
-15	3630	2940	2760 2580 2410		
-10	3680	2990	2800 2620 2450		
-5	3740	3040	2840 2660 2490		
0	3790	3080	2890 2700 2530		
5	3850	3130	2930 2750 2570		
10	3910	3180	2980 2790 2610		
15	3960	3230	3020 2830 2650		
20	4020	3270	3070 2880 2690		
25	4080	3320	3120 2920 2740		
30	4140	3370	3160 2960 2780		
35	4200	3420	3210 3010 2820		
36	4220	3440	3220 3020 2830		

WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	3280	2660	2490 2330 2170		
-30	3330	2700	2530 2370 2210		
-25	3380	2750	2570 2400 2250		
-20	3430	2790	2610 2440 2280		
-15	3480	2830	2650 2480 2320		
-10	3540	2880	2690 2520 2360		
-5	3590	2920	2740 2560 2400		
0	3640	2960	2780 2600 2430		
5	3690	3010	2820 2640 2470		
10	3740	3050	2860 2680 2510		
15	3790	3100	2900 2720 2550		
20	3850	3140	2950 2760 2590		
25	3900	3190	2990 2800 2630		
30	3960	3230	3030 2840 2660		
35	4010	3280	3080 2880 2700		
36	4030	3290	3090 2900 2720		

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	3160	2560	2400 2240 2090		
-30	3210	2610	2440 2280 2130		
-25	3260	2650	2480 2310 2160		
-20	3300	2690	2510 2350 2200		
-15	3350	2730	2550 2390 2230		
-10	3400	2770	2590 2430 2270		
-5	3440	2810	2630 2460 2300		
0	3490	2850	2670 2500 2340		
5	3540	2890	2710 2540 2370		
10	3590	2930	2750 2570 2410		
15	3630	2970	2790 2610 2450		
20	3680	3010	2830 2650 2480		
25	3730	3060	2870 2690 2520		
30	3780	3100	2910 2730 2560		
35	3830	3140	2950 2770 2590		
36	3850	3150	2960 2780 2610		

WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	3050	2470	2310 2160 2010		
-30	3090	2510	2350 2190 2050		
-25	3130	2550	2380 2230 2080		
-20	3180	2580	2420 2260 2110		
-15	3220	2620	2460 2300 2150		
-10	3260	2660	2490 2330 2180		
-5	3310	2700	2530 2370 2210		
0	3350	2740	2560 2400 2250		
5	3390	2770	2600 2440 2280		
10	3440	2810	2640 2470 2310		
15	3480	2850	2670 2510 2350		
20	3530	2890	2710 2540 2380		
25	3570	2930	2750 2580 2420		
30	3620	2970	2790 2610 2450		
35	3670	3010	2820 2650 2480		
36	3680	3020	2840 2660 2500		

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	2930	2380	2220 2070 1930		
-30	2970	2410	2260 2110 1960		
-25	3010	2450	2290 2140 2000		
-20	3050	2480	2320 2170 2030		
-15	3090	2520	2360 2200 2060		
-10	3130	2550	2390 2240 2090		
-5	3170	2590	2430 2270 2120		
0	3210	2620	2460 2300 2150		
5	3250	2660	2490 2340 2180		
10	3290	2690	2530 2370 2220		
15	3340	2730	2560 2400 2250		
20	3380	2770	2600 2430 2280		
25	3420	2800	2630 2470 2310		
30	3460	2840	2670 2500 2340		
35	3500	2880	2700 2540 2380		
36	3520	2890	2710 2550 2390		

WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-35	2820	2280	2130 1990 1860		
-30	2860	2320	2170 2020 1890		
-25	2890	2350	2200 2050 1910		
-20	2930	2380	2230 2080 1940		
-15	2970	2420	2260 2110 1970		
-10	3010	2450	2290 2150 2000		
-5	3040	2480	2330 2180 2030		
0	3080	2520	2360 2210 2060		
5	3120	2550	2390 2240 2090		
10	3160	2580	2420 2270 2120		
15	3190	2620	2450 2300 2150		
20	3230	2650	2490 2330 2180		
25	3270	2680	2520 2360 2210		
30	3310	2720	2550 2390 2240		
35	3350	2750	2580 2420 2270		
36	3360	2760	2600 2440 2280		

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 20 of 30)

LANDING DISTANCE - FEET

ACTUAL DISTANCE

FLAPS - FULL
10.000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4640	3670	3420	3180	2960
-30	4740	3750	3490	3250	3030
-25	4840	3830	3560	3320	3090
-20	4950	3910	3630	3380	3150
-15	5050	3990	3710	3450	3210
-10	5160	4070	3780	3520	3280
-5	5270	4150	3860	3590	3340
0	5380	4230	3930	3660	3410
5	5500	4320	4010	3730	3470
10	5620	4410	4090	3800	3540
15	5740	4490	4170	3880	3610
16	5770	4520	4190	3900	3630

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4210	3370	3140	2930	2740
-30	4290	3440	3200	2990	2790
-25	4370	3500	3270	3050	2840
-20	4460	3570	3330	3110	2900
-15	4540	3630	3390	3160	2950
-10	4630	3700	3450	3220	3010
-5	4720	3770	3520	3280	3060
0	4800	3840	3580	3340	3120
5	4890	3910	3650	3400	3180
10	4990	3980	3710	3460	3230
15	5080	4050	3780	3530	3290
20	5180	4130	3850	3590	3350
24	5270	4190	3910	3650	3400

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4140	3320	3100	2890	2700
-30	4220	3380	3160	2950	2750
-25	4300	3450	3220	3000	2800
-20	4380	3510	3280	3060	2860
-15	4460	3570	3340	3120	2910
-10	4540	3640	3400	3170	2960
-5	4630	3710	3460	3230	3020
0	4710	3770	3520	3290	3070
5	4800	3840	3580	3350	3130
10	4890	3910	3650	3410	3180
15	4980	3980	3710	3470	3240
20	5070	4050	3780	3530	3300
25	5160	4120	3850	3590	3350

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3970	3190	2980	2790	2600
-30	4040	3250	3040	2840	2650
-25	4110	3310	3100	2890	2700
-20	4190	3370	3150	2940	2750
-15	4260	3430	3210	3000	2800
-10	4340	3490	3260	3050	2850
-5	4410	3550	3320	3110	2900
0	4490	3620	3380	3160	2950
5	4570	3680	3440	3210	3000
10	4650	3740	3500	3270	3060
15	4730	3810	3560	3330	3110
20	4810	3870	3620	3380	3160
25	4900	3940	3680	3440	3220
29	4980	4000	3740	3490	3270

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3810	3080	2880	2690	2510
-30	3880	3130	2930	2740	2560
-25	3940	3190	2980	2790	2600
-20	4010	3240	3030	2830	2650
-15	4080	3300	3080	2880	2700
-10	4150	3350	3140	2930	2740
-5	4220	3410	3190	2980	2790
0	4290	3470	3240	3040	2840
5	4360	3530	3300	3090	2890
10	4430	3580	3350	3140	2940
15	4510	3640	3410	3190	2990
20	4580	3700	3470	3240	3030
25	4660	3760	3520	3300	3080
30	4730	3830	3580	3350	3140
33	4790	3870	3620	3390	3170

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3660	2960	2770	2590	2420
-30	3720	3010	2820	2640	2460
-25	3790	3070	2870	2680	2510
-20	3850	3120	2920	2730	2550
-15	3910	3170	2970	2780	2600
-10	3970	3220	3020	2820	2640
-5	4040	3280	3070	2870	2680
0	4100	3330	3120	2920	2730
5	4170	3380	3170	2960	2770
10	4230	3440	3220	3010	2820
15	4300	3490	3270	3060	2870
20	4370	3550	3320	3110	2910
25	4440	3600	3370	3160	2960
30	4510	3660	3430	3210	3010
34	4570	3710	3480	3260	3050

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 21 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
10,000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS		VAPP = 105 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3520	2850	2670	2500	2330
-30	3580	2900	2720	2540	2370
-25	3630	2950	2760	2580	2410
-20	3690	3000	2810	2630	2460
-15	3750	3050	2850	2670	2500
-10	3810	3100	2900	2710	2540
-5	3870	3140	2950	2760	2580
0	3930	3190	2990	2800	2620
5	3980	3240	3040	2850	2670
10	4050	3290	3090	2890	2710
15	4110	3340	3130	2940	2750
20	4170	3400	3180	2980	2800
25	4230	3450	3230	3030	2840
30	4290	3500	3280	3080	2880
34	4350	3550	3330	3120	2920

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS		VAPP = 103 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3390	2750	2570	2400	2250
-30	3440	2790	2610	2450	2290
-25	3490	2840	2660	2490	2320
-20	3550	2880	2700	2530	2360
-15	3600	2930	2740	2570	2400
-10	3650	2970	2790	2610	2440
-5	3710	3020	2830	2650	2480
0	3760	3070	2870	2690	2520
5	3810	3110	2920	2730	2560
10	3870	3160	2960	2780	2600
15	3930	3210	3010	2820	2640
20	3980	3250	3050	2860	2680
25	4040	3300	3100	2900	2720
30	4100	3350	3140	2950	2760
34	4150	3390	3190	2990	2800

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS		VAPP = 101 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3260	2650	2480	2320	2160
-30	3310	2690	2520	2350	2200
-25	3360	2730	2560	2390	2240
-20	3410	2770	2600	2430	2270
-15	3450	2820	2640	2470	2310
-10	3500	2860	2680	2510	2350
-5	3550	2900	2720	2550	2380
0	3600	2940	2760	2590	2420
5	3650	2990	2800	2630	2460
10	3710	3030	2840	2670	2500
15	3760	3070	2880	2700	2530
20	3810	3120	2930	2740	2570
25	3860	3160	2970	2790	2610
30	3910	3210	3010	2830	2650
34	3960	3250	3050	2860	2690

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS		VAPP = 99 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3140	2550	2380	2230	2080
-30	3180	2590	2420	2260	2110
-25	3230	2630	2460	2300	2150
-20	3270	2670	2500	2340	2180
-15	3320	2710	2540	2370	2220
-10	3360	2750	2570	2410	2250
-5	3410	2790	2610	2450	2290
0	3460	2830	2650	2480	2320
5	3500	2860	2690	2520	2360
10	3550	2910	2730	2560	2390
15	3600	2950	2770	2590	2430
20	3640	2990	2800	2630	2470
25	3690	3030	2840	2670	2500
30	3740	3070	2880	2710	2540
34	3790	3110	2920	2740	2570

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS		VAPP = 97 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3010	2450	2290	2140	2000
-30	3060	2490	2330	2170	2030
-25	3100	2520	2360	2210	2060
-20	3140	2560	2400	2240	2100
-15	3180	2600	2430	2280	2130
-10	3230	2630	2470	2310	2160
-5	3270	2670	2500	2350	2190
0	3310	2710	2540	2380	2230
5	3350	2750	2580	2410	2260
10	3400	2780	2610	2450	2290
15	3440	2820	2650	2480	2330
20	3480	2860	2680	2520	2360
25	3530	2900	2720	2550	2390
30	3570	2940	2760	2590	2430
34	3610	2970	2790	2620	2460

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS		VAPP = 95 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	2900	2350	2200	2050	1920
-30	2940	2390	2230	2090	1950
-25	2980	2420	2270	2120	1980
-20	3020	2460	2300	2150	2010
-15	3050	2490	2330	2180	2040
-10	3090	2530	2370	2220	2070
-5	3130	2560	2400	2250	2100
0	3170	2590	2430	2280	2130
5	3210	2630	2470	2310	2160
10	3250	2660	2500	2340	2190
15	3290	2700	2530	2380	2220
20	3330	2730	2570	2410	2250
25	3370	2770	2600	2440	2290
30	3410	2810	2640	2470	2320
34	3450	2840	2670	2500	2350

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 22 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
11,000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS			VAPP = 117 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4840	3830	3560	3310	3090
-30	4950	3910	3640	3390	3150
-25	5060	3990	3710	3460	3220
-20	5180	4080	3790	3530	3290
-15	5290	4170	3870	3600	3350
-10	5410	4250	3950	3680	3420
-5	5530	4340	4030	3750	3490
0	5660	4430	4120	3830	3560
5	5790	4530	4200	3900	3630
10	5920	4620	4290	3980	3710
11	5950	4650	4310	4000	3730

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS			VAPP = 113 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4380	3500	3270	3050	2840
-30	4460	3570	3330	3110	2900
-25	4550	3640	3400	3170	2960
-20	4640	3710	3460	3230	3020
-15	4730	3780	3530	3290	3070
-10	4830	3860	3600	3360	3130
-5	4920	3930	3660	3420	3190
0	5020	4000	3730	3480	3250
5	5120	4080	3800	3550	3310
10	5220	4160	3870	3610	3370
15	5320	4230	3950	3680	3440
19	5430	4310	4020	3750	3500

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS			VAPP = 112 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4300	3450	3220	3000	2800
-30	4380	3510	3280	3060	2860
-25	4470	3580	3340	3120	2910
-20	4560	3650	3410	3180	2970
-15	4640	3720	3470	3240	3030
-10	4730	3790	3540	3300	3080
-5	4830	3860	3600	3360	3140
0	4920	3930	3670	3430	3200
5	5010	4010	3740	3490	3260
10	5110	4080	3810	3550	3320
15	5210	4150	3870	3620	3380
20	5310	4230	3950	3680	3440
21	5340	4260	3970	3700	3460

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS			VAPP = 110 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4120	3310	3100	2890	2700
-30	4190	3380	3150	2950	2750
-25	4270	3440	3210	3000	2810
-20	4350	3500	3270	3060	2860
-15	4430	3570	3330	3110	2910
-10	4510	3630	3390	3170	2960
-5	4600	3700	3450	3230	3020
0	4680	3760	3520	3290	3070
5	4760	3830	3580	3340	3130
10	4850	3900	3640	3400	3180
15	4940	3970	3710	3460	3240
20	5030	4040	3770	3520	3300
25	5120	4110	3840	3590	3350

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS			VAPP = 109 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3950	3190	2980	2790	2600
-30	4020	3250	3040	2840	2650
-25	4090	3300	3090	2890	2700
-20	4160	3360	3150	2940	2750
-15	4240	3420	3200	2990	2800
-10	4310	3480	3260	3050	2850
-5	4380	3540	3310	3100	2900
0	4460	3600	3370	3150	2950
5	4540	3670	3430	3210	3000
10	4620	3730	3490	3260	3050
15	4700	3790	3550	3320	3110
20	4780	3860	3610	3380	3160
25	4860	3920	3670	3430	3210
29	4930	3980	3720	3480	3260

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS			VAPP = 107 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3790	3070	2870	2680	2510
-30	3850	3120	2920	2730	2550
-25	3920	3180	2970	2780	2600
-20	3990	3230	3020	2830	2650
-15	4050	3290	3080	2880	2690
-10	4120	3340	3130	2930	2740
-5	4190	3400	3180	2980	2790
0	4260	3450	3230	3030	2830
5	4330	3510	3290	3080	2880
10	4400	3570	3340	3130	2930
15	4470	3630	3400	3180	2980
20	4540	3690	3450	3230	3030
25	4620	3750	3510	3290	3080
30	4690	3810	3570	3340	3130
32	4730	3840	3600	3370	3160

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 23 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
11.000 FEET

CONDITIONS: LANDING GEAR - DOWN ANTI-ICE SYSTEMS - ON OR OFF
 SPEED BRAKES - EXTEND AFTER TOUCHDOWN THRUST - IDLE
 AIRSPEED - VREF AT 50 FEET

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS						WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS				10 KTS	20 KTS	30 KTS
-35	3640	2950	2760	2580	2410	-35	3500	2840	2660	2490	2320
-30	3700	3000	2810	2630	2460	-30	3550	2890	2700	2530	2370
-25	3760	3050	2860	2680	2500	-25	3610	2940	2750	2570	2410
-20	3820	3100	2910	2720	2550	-20	3660	2980	2790	2620	2450
-15	3880	3160	2960	2770	2590	-15	3720	3030	2840	2660	2490
-10	3940	3210	3010	2810	2630	-10	3780	3080	2890	2700	2530
-5	4010	3260	3050	2860	2680	-5	3840	3130	2930	2750	2570
0	4070	3310	3100	2910	2720	0	3890	3180	2980	2790	2610
5	4130	3360	3150	2950	2770	5	3950	3230	3020	2840	2660
10	4200	3420	3200	3000	2810	10	4010	3270	3070	2880	2700
15	4260	3470	3250	3050	2860	15	4070	3320	3120	2920	2740
20	4330	3530	3310	3100	2900	20	4130	3380	3170	2970	2780
25	4400	3580	3360	3150	2950	25	4190	3430	3210	3020	2830
30	4470	3640	3410	3200	3000	30	4250	3480	3260	3060	2870
32	4500	3670	3440	3220	3020	32	4290	3500	3290	3090	2890

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS						WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS				10 KTS	20 KTS	30 KTS
-35	3360	2730	2560	2390	2240	-35	3230	2630	2460	2300	2150
-30	3410	2780	2600	2430	2280	-30	3280	2670	2500	2340	2190
-25	3460	2820	2640	2480	2310	-25	3330	2710	2540	2380	2220
-20	3520	2870	2690	2520	2350	-20	3370	2750	2580	2420	2260
-15	3570	2910	2730	2560	2390	-15	3420	2800	2620	2450	2300
-10	3620	2960	2770	2600	2430	-10	3470	2840	2660	2490	2330
-5	3670	3000	2810	2640	2470	-5	3520	2880	2700	2530	2370
0	3730	3050	2860	2680	2510	0	3570	2920	2740	2570	2410
5	3780	3090	2900	2720	2550	5	3620	2960	2780	2610	2440
10	3830	3140	2950	2760	2590	10	3670	3010	2820	2650	2480
15	3890	3180	2990	2800	2630	15	3720	3050	2860	2690	2520
20	3950	3230	3030	2850	2670	20	3770	3090	2900	2730	2560
25	4000	3280	3080	2890	2710	25	3820	3140	2950	2770	2590
30	4060	3330	3120	2930	2750	30	3870	3180	2990	2810	2630
32	4090	3350	3150	2950	2770	32	3900	3200	3010	2830	2650

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS						WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS				10 KTS	20 KTS	30 KTS
-35	3100	2520	2360	2210	2060	-35	2980	2420	2270	2120	1980
-30	3150	2560	2400	2250	2100	-30	3020	2460	2300	2150	2010
-25	3190	2600	2440	2280	2130	-25	3060	2500	2340	2190	2040
-20	3240	2640	2480	2320	2170	-20	3100	2530	2370	2220	2080
-15	3280	2680	2510	2350	2200	-15	3140	2570	2410	2260	2110
-10	3330	2720	2550	2390	2240	-10	3190	2610	2440	2290	2140
-5	3370	2760	2590	2430	2270	-5	3230	2640	2480	2320	2170
0	3420	2800	2630	2460	2310	0	3270	2680	2510	2360	2210
5	3460	2840	2660	2500	2340	5	3310	2720	2550	2390	2240
10	3510	2880	2700	2530	2370	10	3350	2750	2580	2420	2270
15	3550	2920	2740	2570	2410	15	3400	2790	2620	2460	2300
20	3600	2960	2780	2610	2440	20	3440	2830	2660	2490	2340
25	3650	3000	2820	2640	2480	25	3480	2860	2690	2530	2370
30	3690	3040	2860	2680	2520	30	3530	2900	2730	2560	2400
32	3720	3060	2880	2700	2530	32	3550	2920	2750	2580	2420

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
 TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 24 of 30)

LANDING DISTANCE - FEET

ACTUAL DISTANCE

FLAPS - FULL
12,000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★ WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	5070	4000	3710	3460	3220
-30	5190	4080	3800	3530	3290
-25	5310	4170	3880	3610	3360
-20	5430	4270	3960	3690	3430
-15	5560	4360	4050	3760	3500
-10	5690	4450	4130	3840	3580
-5	5830	4550	4220	3920	3650
0	5960	4650	4310	4010	3730
5	6110	4750	4410	4090	3800
6	6140	4770	4430	4110	3820

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4560	3640	3400	3170	2960
-30	4650	3720	3470	3230	3020
-25	4750	3790	3540	3300	3080
-20	4840	3870	3610	3360	3140
-15	4940	3940	3680	3430	3200
-10	5050	4020	3750	3500	3270
-5	5150	4100	3820	3570	3330
0	5260	4180	3900	3630	3390
5	5360	4260	3970	3700	3460
10	5470	4350	4050	3780	3520
15	5590	4430	4130	3850	3590

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4470	3580	3340	3120	2910
-30	4560	3660	3410	3180	2970
-25	4660	3730	3480	3250	3030
-20	4750	3800	3550	3310	3090
-15	4850	3880	3620	3380	3150
-10	4940	3950	3690	3440	3210
-5	5040	4030	3760	3510	3270
0	5140	4100	3830	3570	3340
5	5250	4180	3900	3640	3400
10	5350	4260	3970	3710	3460
15	5460	4340	4050	3780	3530
16	5500	4370	4080	3800	3550

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4280	3440	3210	3000	2810
-30	4360	3510	3280	3060	2860
-25	4440	3570	3340	3120	2920
-20	4530	3640	3400	3180	2970
-15	4620	3710	3470	3240	3030
-10	4700	3780	3530	3300	3080
-5	4790	3850	3600	3360	3140
0	4880	3920	3660	3420	3200
5	4980	3990	3730	3490	3260
10	5070	4070	3800	3550	3320
15	5170	4140	3870	3610	3380
20	5260	4220	3940	3680	3440

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	4090	3310	3090	2890	2700
-30	4170	3370	3150	2950	2750
-25	4250	3430	3210	3000	2800
-20	4320	3490	3270	3060	2860
-15	4400	3560	3330	3110	2910
-10	4480	3620	3390	3170	2960
-5	4560	3690	3450	3220	3020
0	4650	3750	3510	3280	3070
5	4730	3820	3570	3340	3130
10	4810	3880	3630	3400	3180
15	4900	3950	3700	3460	3240
20	4990	4020	3760	3520	3290
25	5080	4090	3820	3580	3350

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3920	3180	2970	2780	2600
-30	3990	3240	3030	2830	2650
-25	4060	3290	3080	2880	2700
-20	4130	3350	3140	2940	2750
-15	4210	3410	3190	2990	2800
-10	4280	3470	3250	3040	2850
-5	4350	3530	3300	3090	2900
0	4430	3590	3360	3150	2950
5	4500	3650	3420	3200	3000
10	4580	3710	3480	3260	3050
15	4660	3770	3530	3310	3100
20	4730	3840	3590	3370	3150
25	4810	3900	3650	3420	3210
29	4880	3960	3710	3470	3250

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 25 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
12.000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS VREF = 100 KIAS VAPP = 105 KIAS						WEIGHT = 12500 POUNDS VREF = 98 KIAS VAPP = 103 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3760	3060	2860	2680	2500	-35	3610	2940	2750	2580	2410
-30	3830	3110	2910	2720	2550	-30	3670	2990	2800	2620	2450
-25	3890	3160	2960	2770	2590	-25	3730	3040	2850	2670	2490
-20	3960	3220	3010	2820	2640	-20	3790	3090	2890	2710	2540
-15	4020	3270	3060	2870	2690	-15	3850	3140	2940	2760	2580
-10	4090	3330	3120	2920	2730	-10	3910	3190	2990	2800	2630
-5	4160	3380	3170	2970	2780	-5	3970	3240	3040	2850	2670
0	4220	3440	3220	3020	2830	0	4030	3290	3090	2900	2710
5	4290	3490	3270	3070	2880	5	4100	3350	3140	2940	2760
10	4360	3550	3330	3120	2920	10	4160	3400	3190	2990	2800
15	4430	3610	3380	3170	2970	15	4220	3450	3240	3040	2850
20	4500	3670	3440	3220	3020	20	4290	3500	3290	3090	2890
25	4580	3730	3490	3270	3070	25	4360	3560	3340	3130	2940
30	4650	3780	3550	3330	3120	30	4420	3610	3390	3180	2980

WEIGHT = 12000 POUNDS VREF = 96 KIAS VAPP = 101 KIAS						WEIGHT = 11500 POUNDS VREF = 94 KIAS VAPP = 99 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3470	2820	2650	2480	2320	-35	3330	2710	2540	2380	2230
-30	3520	2870	2690	2520	2360	-30	3380	2760	2580	2420	2260
-25	3580	2920	2740	2560	2400	-25	3430	2800	2630	2460	2300
-20	3630	2960	2780	2600	2440	-20	3480	2850	2670	2500	2340
-15	3690	3010	2820	2650	2480	-15	3530	2890	2710	2540	2380
-10	3740	3060	2870	2690	2520	-10	3590	2930	2750	2580	2420
-5	3800	3110	2920	2730	2560	-5	3640	2980	2800	2620	2460
0	3860	3160	2960	2780	2600	0	3690	3020	2840	2660	2490
5	3910	3200	3010	2820	2640	5	3740	3070	2880	2700	2530
10	3970	3250	3050	2860	2690	10	3800	3110	2920	2740	2570
15	4030	3300	3100	2910	2730	15	3850	3160	2970	2790	2610
20	4090	3350	3150	2950	2770	20	3900	3200	3010	2830	2650
25	4150	3400	3190	3000	2810	25	3960	3250	3050	2870	2690
30	4210	3450	3240	3040	2860	30	4010	3300	3100	2910	2730

WEIGHT = 11000 POUNDS VREF = 92 KIAS VAPP = 97 KIAS						WEIGHT = 10500 POUNDS VREF = 90 KIAS VAPP = 95 KIAS					
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3200	2610	2440	2280	2130	-35	3070	2500	2340	2190	2040
-30	3240	2650	2480	2320	2170	-30	3110	2540	2380	2220	2080
-25	3290	2690	2520	2360	2210	-25	3150	2580	2410	2260	2110
-20	3340	2730	2560	2400	2240	-20	3200	2610	2450	2300	2150
-15	3380	2770	2600	2430	2280	-15	3240	2650	2490	2330	2180
-10	3430	2810	2640	2470	2310	-10	3280	2690	2520	2370	2210
-5	3480	2850	2680	2510	2350	-5	3330	2730	2560	2400	2250
0	3530	2890	2720	2550	2390	0	3370	2770	2600	2440	2280
5	3580	2940	2760	2590	2420	5	3420	2810	2640	2470	2320
10	3620	2980	2800	2620	2460	10	3460	2850	2670	2510	2350
15	3670	3020	2840	2660	2500	15	3510	2880	2710	2540	2390
20	3720	3060	2880	2700	2530	20	3550	2920	2750	2580	2420
25	3770	3100	2920	2740	2570	25	3600	2960	2790	2620	2460
30	3820	3150	2960	2780	2610	30	3650	3000	2820	2650	2490

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 26 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
13,000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	5420	4260	3950	3680	3420
-30	5550	4360	4040	3760	3500
-25	5690	4460	4140	3840	3580
-20	5830	4560	4230	3930	3660
-15	5970	4660	4320	4020	3740
-10	6120	4770	4420	4100	3820
-5	6280	4880	4520	4190	3900
0		4990	4620	4290	3980

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4850	3870	3610	3360	3140
-30	4950	3950	3680	3430	3200
-25	5060	4030	3760	3500	3270
-20	5170	4110	3830	3580	3340
-15	5280	4200	3910	3650	3410
-10	5390	4290	3990	3720	3470
-5	5510	4370	4070	3800	3540
0	5630	4460	4150	3870	3610
5	5750	4550	4240	3950	3680
9	5870	4640	4320	4020	3750

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4750	3800	3550	3310	3090
-30	4850	3880	3620	3380	3150
-25	4960	3960	3690	3450	3220
-20	5060	4040	3770	3520	3280
-15	5170	4120	3840	3590	3350
-10	5280	4210	3920	3660	3420
-5	5390	4290	4000	3730	3480
0	5500	4380	4080	3800	3550
5	5620	4460	4160	3880	3620
10	5730	4550	4240	3950	3690
11	5770	4580	4270	3980	3710

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4540	3650	3410	3180	2970
-30	4630	3720	3470	3250	3030
-25	4720	3790	3540	3310	3090
-20	4820	3870	3610	3370	3150
-15	4910	3940	3680	3440	3210
-10	5010	4020	3750	3510	3280
-5	5110	4100	3820	3570	3340
0	5210	4170	3900	3640	3400
5	5310	4250	3970	3710	3470
10	5420	4330	4040	3780	3530
15	5520	4420	4120	3850	3600
16	5550	4430	4140	3860	3610

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4340	3500	3270	3060	2860
-30	4420	3570	3340	3120	2920
-25	4500	3630	3400	3180	2970
-20	4590	3700	3460	3240	3030
-15	4680	3770	3530	3300	3090
-10	4760	3840	3590	3360	3140
-5	4850	3910	3660	3420	3200
0	4940	3990	3730	3490	3260
5	5040	4060	3790	3550	3320
10	5130	4130	3860	3610	3380
15	5230	4210	3930	3680	3440
20	5320	4280	4000	3740	3500

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4150	3360	3140	2940	2750
-30	4220	3420	3200	3000	2800
-25	4300	3490	3260	3050	2860
-20	4380	3550	3320	3110	2910
-15	4460	3610	3380	3170	2960
-10	4540	3680	3440	3220	3020
-5	4620	3740	3500	3280	3070
0	4700	3810	3570	3340	3130
5	4790	3880	3630	3400	3180
10	4870	3940	3690	3460	3240
15	4960	4010	3760	3520	3290
20	5040	4080	3820	3580	3350
24	5130	4150	3880	3640	3410

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.

TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 27 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
13.000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS		VAPP = 105 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3970	3230	3020	2830	2650
-30	4040	3290	3080	2880	2700
-25	4110	3340	3130	2930	2750
-20	4190	3400	3190	2990	2790
-15	4260	3460	3240	3040	2850
-10	4330	3520	3300	3090	2900
-5	4410	3580	3360	3150	2950
0	4480	3640	3410	3200	3000
5	4550	3710	3470	3250	3050
10	4630	3770	3530	3310	3100
15	4710	3830	3590	3360	3150
20	4790	3890	3650	3420	3210
25	4870	3960	3710	3480	3260
28	4930	4010	3750	3520	3300

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS		VAPP = 103 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3810	3100	2900	2720	2540
-30	3870	3150	2960	2770	2590
-25	3940	3210	3010	2820	2640
-20	4000	3260	3060	2870	2680
-15	4070	3320	3110	2920	2730
-10	4140	3380	3160	2970	2780
-5	4200	3430	3220	3020	2830
0	4270	3490	3270	3070	2870
5	4340	3540	3320	3120	2920
10	4410	3600	3380	3170	2970
15	4480	3660	3430	3220	3020
20	4550	3720	3490	3270	3070
25	4620	3780	3540	3320	3120
28	4680	3820	3580	3360	3150

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS		VAPP = 101 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3650	2980	2790	2610	2440
-30	3710	3030	2840	2660	2490
-25	3770	3080	2890	2710	2530
-20	3830	3130	2940	2750	2580
-15	3890	3180	2990	2800	2620
-10	3960	3230	3030	2850	2670
-5	4020	3290	3080	2890	2710
0	4080	3340	3130	2940	2760
5	4140	3390	3180	2990	2800
10	4200	3440	3230	3030	2850
15	4270	3500	3280	3080	2890
20	4330	3550	3330	3130	2940
25	4400	3600	3390	3180	2980
28	4450	3650	3420	3210	3020

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS		VAPP = 99 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3500	2860	2680	2510	2350
-30	3560	2910	2730	2550	2390
-25	3620	2950	2770	2600	2430
-20	3670	3000	2820	2640	2470
-15	3730	3050	2860	2680	2510
-10	3780	3100	2910	2730	2560
-5	3840	3150	2950	2770	2600
0	3900	3200	3000	2810	2640
5	3950	3240	3050	2860	2680
10	4010	3290	3090	2900	2720
15	4070	3340	3140	2950	2770
20	4130	3390	3190	2990	2810
25	4190	3440	3230	3040	2850
28	4230	3480	3270	3070	2880

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS		VAPP = 97 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3360	2740	2570	2410	2250
-30	3410	2790	2610	2450	2290
-25	3460	2830	2660	2490	2330
-20	3510	2880	2700	2530	2370
-15	3570	2920	2740	2570	2410
-10	3620	2970	2780	2610	2450
-5	3670	3010	2830	2650	2480
0	3720	3060	2870	2690	2520
5	3770	3100	2910	2730	2560
10	3830	3150	2960	2770	2600
15	3880	3190	3000	2820	2640
20	3930	3240	3040	2860	2680
25	3990	3280	3090	2900	2720
28	4030	3320	3120	2930	2750

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS		VAPP = 95 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3220	2630	2460	2310	2160
-30	3270	2670	2500	2340	2190
-25	3320	2710	2540	2380	2230
-20	3360	2750	2580	2420	2270
-15	3410	2800	2620	2460	2300
-10	3460	2840	2660	2500	2340
-5	3510	2880	2700	2540	2380
0	3560	2920	2740	2570	2410
5	3600	2960	2780	2610	2450
10	3650	3000	2820	2650	2490
15	3700	3050	2860	2690	2520
20	3750	3090	2900	2730	2560
25	3800	3130	2950	2770	2600
28	3840	3160	2980	2800	2630

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 28 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
14,000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTEND AFTER TOUCHDOWN
AIRSPEED - VREF AT 50 FEET
ANTI-ICE SYSTEMS - ON OR OFF
THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

★WEIGHT = 16300 POUNDS					
VREF = 111 KIAS		VAPP = 117 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	5820	4550	4220	3920	3650
-30	5970	4660	4320	4020	3740
-25	6120	4770	4420	4110	3820
-20	6280	4890	4530	4200	3910
-15	6450	5000	4630	4300	4000
-10		5120	4740	4400	4090
-8		5190	4800	4450	4140

WEIGHT = 15200 POUNDS					
VREF = 107 KIAS		VAPP = 113 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	5170	4120	3840	3580	3340
-30	5290	4210	3920	3660	3410
-25	5410	4300	4000	3730	3480
-20	5530	4390	4090	3810	3560
-15	5660	4490	4180	3890	3630
-10	5790	4580	4260	3970	3710
-5	5920	4680	4350	4060	3780
0	6050	4780	4440	4140	3860
3	6150	4850	4510	4200	3920

WEIGHT = 15000 POUNDS					
VREF = 106 KIAS		VAPP = 112 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	5070	4050	3770	3520	3290
-30	5180	4130	3850	3600	3360
-25	5300	4220	3930	3670	3430
-20	5410	4310	4020	3750	3500
-15	5530	4400	4100	3830	3570
-10	5660	4490	4190	3900	3640
-5	5780	4590	4270	3980	3720
0	5910	4680	4360	4060	3790
5	6040	4780	4450	4140	3870

WEIGHT = 14500 POUNDS					
VREF = 105 KIAS		VAPP = 110 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4830	3870	3620	3380	3160
-30	4930	3950	3690	3450	3220
-25	5030	4040	3770	3520	3290
-20	5140	4120	3840	3590	3360
-15	5250	4200	3920	3660	3420
-10	5350	4280	4000	3740	3490
-5	5460	4370	4080	3810	3560
0	5580	4460	4160	3880	3630
5	5690	4540	4240	3960	3700
10	5810	4630	4320	4030	3770

WEIGHT = 14000 POUNDS					
VREF = 103 KIAS		VAPP = 109 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4600	3710	3470	3250	3030
-30	4700	3790	3540	3310	3100
-25	4790	3860	3610	3380	3160
-20	4890	3940	3680	3440	3220
-15	4980	4010	3750	3510	3280
-10	5080	4090	3820	3580	3350
-5	5180	4170	3900	3640	3410
0	5280	4250	3970	3710	3470
5	5380	4330	4040	3780	3540
10	5490	4410	4120	3850	3600
15	5590	4490	4200	3920	3670

WEIGHT = 13500 POUNDS					
VREF = 101 KIAS		VAPP = 107 KIAS			
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4400	3560	3330	3120	2920
-30	4480	3630	3400	3180	2970
-25	4570	3700	3460	3240	3030
-20	4660	3770	3530	3300	3090
-15	4740	3840	3590	3360	3150
-10	4830	3910	3660	3430	3210
-5	4920	3980	3730	3490	3270
0	5010	4050	3790	3550	3330
5	5100	4130	3860	3620	3390
10	5200	4200	3930	3680	3450
15	5290	4280	4000	3750	3510
20	5390	4350	4070	3810	3570

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-37 (Sheet 29 of 30)

LANDING DISTANCE - FEET ACTUAL DISTANCE

FLAPS - FULL
14,000 FEET

CONDITIONS: LANDING GEAR - DOWN

SPEED BRAKES - EXTEND AFTER TOUCHDOWN

AIRSPEED - VREF AT 50 FEET

ANTI-ICE SYSTEMS - ON OR OFF

THRUST - IDLE

SOME CONDITIONS MAY BE BRAKE ENERGY OR CLIMB LIMITED. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM LANDING WEIGHT TABLES.

WEIGHT = 13000 POUNDS					
VREF = 100 KIAS			VAPP = 105 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4210	3420	3200	3000	2800
-30	4280	3480	3260	3050	2860
-25	4360	3540	3320	3110	2910
-20	4440	3610	3380	3170	2970
-15	4520	3670	3440	3230	3020
-10	4600	3740	3500	3280	3080
-5	4680	3810	3570	3340	3130
0	4760	3870	3630	3400	3190
5	4850	3940	3690	3460	3240
10	4930	4010	3750	3520	3300
15	5020	4080	3820	3580	3350
20	5100	4150	3880	3640	3410
25	5190	4210	3950	3700	3470

WEIGHT = 12500 POUNDS					
VREF = 98 KIAS			VAPP = 103 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	4030	3280	3070	2880	2690
-30	4100	3340	3130	2930	2740
-25	4170	3400	3190	2980	2790
-20	4240	3460	3240	3040	2850
-15	4320	3520	3300	3090	2900
-10	4390	3580	3360	3150	2950
-5	4460	3640	3410	3200	3000
0	4540	3700	3470	3260	3050
5	4610	3760	3530	3310	3100
10	4690	3830	3590	3370	3160
15	4760	3890	3650	3420	3210
20	4840	3950	3710	3480	3260
25	4920	4020	3770	3530	3320
26	4950	4040	3790	3550	3330

WEIGHT = 12000 POUNDS					
VREF = 96 KIAS			VAPP = 101 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3860	3150	2950	2760	2590
-30	3920	3200	3000	2810	2630
-25	3990	3260	3060	2860	2680
-20	4060	3310	3110	2910	2730
-15	4120	3370	3160	2970	2780
-10	4190	3430	3220	3020	2830
-5	4260	3480	3270	3070	2880
0	4330	3540	3320	3120	2920
5	4390	3600	3380	3170	2970
10	4460	3650	3430	3220	3020
15	4530	3710	3490	3270	3070
20	4600	3770	3540	3320	3120
25	4670	3830	3600	3380	3170
26	4700	3850	3620	3390	3190

WEIGHT = 11500 POUNDS					
VREF = 94 KIAS			VAPP = 99 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3700	3020	2830	2650	2480
-30	3760	3070	2880	2700	2530
-25	3820	3120	2930	2750	2570
-20	3880	3180	2980	2790	2620
-15	3940	3230	3030	2840	2660
-10	4000	3280	3080	2890	2710
-5	4060	3330	3130	2940	2750
0	4130	3380	3180	2980	2800
5	4190	3440	3230	3030	2840
10	4250	3490	3280	3080	2890
15	4320	3540	3330	3130	2940
20	4380	3600	3380	3180	2980
25	4440	3650	3430	3220	3030
26	4470	3670	3450	3240	3040

WEIGHT = 11000 POUNDS					
VREF = 92 KIAS			VAPP = 97 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3540	2900	2710	2540	2380
-30	3600	2940	2760	2590	2420
-25	3650	2990	2810	2630	2460
-20	3710	3040	2850	2680	2510
-15	3770	3090	2900	2720	2550
-10	3820	3140	2950	2760	2590
-5	3880	3190	2990	2810	2630
0	3940	3230	3040	2850	2670
5	3990	3280	3080	2900	2720
10	4050	3330	3130	2940	2760
15	4110	3380	3180	2990	2800
20	4170	3430	3230	3030	2850
25	4230	3480	3270	3080	2890
26	4250	3500	3290	3090	2900

WEIGHT = 10500 POUNDS					
VREF = 90 KIAS			VAPP = 95 KIAS		
TEMP DEG C	TAILWIND 10 KTS	ZERO WIND	HEADWINDS		
			10 KTS	20 KTS	30 KTS
-35	3390	2770	2600	2440	2280
-30	3450	2820	2640	2480	2320
-25	3500	2860	2690	2520	2360
-20	3550	2910	2730	2560	2400
-15	3600	2950	2770	2600	2440
-10	3650	3000	2820	2640	2480
-5	3700	3040	2860	2680	2520
0	3760	3090	2900	2720	2560
5	3810	3140	2950	2770	2590
10	3860	3180	2990	2810	2630
15	3920	3230	3030	2850	2670
20	3970	3270	3080	2890	2720
25	4020	3320	3120	2930	2760
26	4040	3330	3140	2950	2770

TO OBTAIN LANDING DISTANCE WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN LANDING DISTANCE WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.



Figure 4-37 (Sheet 30 of 30)

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		★ 16300					15200					15000					14500					14000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	5.8	6.6	6.9	7.3	7.6	6.8	7.8	8.2	8.6	9.1	7.0	8.1	8.5	8.9	9.4	7.6	8.7	9.2	9.7	10.2	8.2	9.4	9.9	10.4	11.1
	-20	5.8	6.6	6.9	7.2	7.6	6.8	7.8	8.2	8.6	9.1	7.0	8.1	8.5	8.9	9.4	7.6	8.7	9.1	9.6	10.2	8.2	9.4	9.9	10.4	11.1
	-15	5.8	6.6	6.9	7.2	7.6	6.8	7.8	8.2	8.6	9.1	7.1	8.1	8.5	8.9	9.4	7.6	8.7	9.1	9.6	10.2	8.2	9.4	9.9	10.4	11.1
	-10	5.8	6.6	6.9	7.2	7.6	6.9	7.8	8.2	8.6	9.1	7.1	8.1	8.5	8.9	9.4	7.6	8.7	9.2	9.6	10.2	8.2	9.4	9.9	10.4	11.1
	-5	5.8	6.6	6.9	7.2	7.6	6.9	7.8	8.2	8.6	9.1	7.1	8.1	8.5	8.9	9.4	7.6	8.7	9.1	9.6	10.2	8.2	9.4	9.9	10.4	11.1
	0	5.8	6.6	6.9	7.2	7.6	6.9	7.8	8.2	8.6	9.1	7.1	8.1	8.4	8.9	9.3	7.6	8.7	9.1	9.6	10.1	8.2	9.4	9.9	10.4	11.1
	5	5.8	6.6	6.9	7.2	7.6	6.9	7.8	8.2	8.6	9.0	7.1	8.0	8.4	8.8	9.3	7.6	8.7	9.1	9.6	10.1	8.2	9.4	9.8	10.4	10.9
	10	5.8	6.5	6.8	7.2	7.5	6.8	7.8	8.1	8.5	9.0	7.1	8.0	8.4	8.8	9.3	7.6	8.7	9.1	9.5	10.1	8.2	9.4	9.8	10.3	10.9
	15	5.8	6.5	6.8	7.1	7.5	6.8	7.8	8.1	8.5	9.0	7.1	8.0	8.4	8.8	9.3	7.6	8.7	9.1	9.5	10.0	8.2	9.3	9.8	10.3	10.9
	20	5.6	6.4	6.7	7.0	7.3	6.7	7.6	7.9	8.3	8.8	6.9	7.8	8.2	8.6	9.1	7.5	8.5	8.9	9.3	9.8	8.0	9.2	9.6	10.1	10.8
	25	5.5	6.2	6.5	6.8	7.1	6.6	7.4	7.8	8.1	8.6	6.8	7.7	8.0	8.4	8.8	7.3	8.3	8.7	9.1	9.6	7.9	9.0	9.4	9.9	10.6
	30	5.0	5.7	5.9	6.2	6.5	6.0	6.8	7.1	7.5	7.9	6.2	7.1	7.4	7.7	8.1	6.8	7.7	8.0	8.4	8.8	7.3	8.3	8.7	9.1	9.8
	35	4.4	5.0	5.2	5.4	5.7	5.4	6.1	6.4	6.7	7.0	5.6	6.3	6.6	6.9	7.3	6.1	6.9	7.2	7.6	8.0	6.6	7.5	7.9	8.3	8.7
	40	3.8	4.3	4.5	4.7	4.9	4.7	5.4	5.6	5.9	6.1	4.9	5.6	5.8	6.1	6.4	5.4	6.1	6.4	6.7	7.0	5.9	6.7	7.0	7.4	7.7
	45	3.2	3.6	3.7	3.9	4.1	4.1	4.6	4.8	5.0	5.3	4.2	4.8	5.0	5.2	5.5	4.7	5.3	5.6	5.8	6.1	5.2	5.9	6.1	6.4	6.8
	50	2.6	2.9	3.0	3.2	3.3	3.4	3.8	4.0	4.2	4.4	3.6	4.0	4.2	4.4	4.6	4.0	4.5	4.7	5.0	5.2	4.5	5.1	5.3	5.5	5.8
	54	2.1	2.3	2.4	2.5	2.6	2.8	3.2	3.3	3.5	3.7	3.0	3.4	3.5	3.7	3.9	3.4	3.9	4.0	4.2	4.4	3.9	4.4	4.6	4.8	5.0
10	-25	5.9	6.7	7.0	7.4	7.8	7.0	8.0	8.4	8.8	9.3	7.2	8.2	8.6	9.1	9.6	7.7	8.9	9.3	9.8	10.4	8.3	9.6	10.1	10.6	11.2
	-20	5.9	6.7	7.0	7.4	7.8	7.0	8.0	8.3	8.8	9.3	7.2	8.2	8.6	9.1	9.6	7.7	8.9	9.3	9.8	10.3	8.3	9.5	10.0	10.6	11.2
	-15	5.9	6.7	7.0	7.4	7.8	7.0	8.0	8.3	8.8	9.2	7.2	8.2	8.6	9.1	9.5	7.8	8.9	9.3	9.8	10.3	8.3	9.6	10.0	10.6	11.2
	-10	5.9	6.7	7.0	7.4	7.8	7.0	8.0	8.4	8.8	9.2	7.2	8.2	8.6	9.1	9.5	7.8	8.9	9.3	9.8	10.3	8.4	9.6	10.0	10.6	11.2
	-5	5.9	6.7	7.0	7.4	7.7	7.0	8.0	8.3	8.8	9.2	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.3	8.4	9.6	10.0	10.6	11.2
	0	5.9	6.7	7.0	7.4	7.7	7.0	8.0	8.3	8.8	9.2	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.3	8.4	9.6	10.0	10.5	11.1
	5	5.9	6.7	7.0	7.3	7.7	7.0	8.0	8.3	8.7	9.2	7.2	8.2	8.6	9.0	9.5	7.8	8.8	9.3	9.7	10.3	8.4	9.5	10.0	10.5	11.1
	10	5.9	6.7	7.0	7.3	7.7	7.0	7.9	8.3	8.7	9.2	7.2	8.2	8.6	9.0	9.4	7.8	8.8	9.3	9.7	10.2	8.4	9.5	10.0	10.5	11.1
	15	5.8	6.5	6.8	7.2	7.5	6.9	7.8	8.1	8.5	9.0	7.1	8.0	8.4	8.8	9.2	7.6	8.7	9.1	9.5	10.0	8.2	9.4	9.8	10.3	10.9
	20	5.5	6.2	6.5	6.8	7.1	6.5	7.4	7.7	8.1	8.5	6.7	7.6	8.0	8.4	8.8	7.3	8.3	8.6	9.1	9.5	7.9	8.9	9.4	9.8	10.3
	25	5.1	5.8	6.0	6.3	6.6	6.2	6.9	7.3	7.6	8.0	6.4	7.2	7.5	7.9	8.3	6.9	7.8	8.1	8.5	9.0	7.4	8.4	8.8	9.3	9.8
	30	4.5	5.1	5.3	5.6	5.8	5.5	6.2	6.5	6.8	7.2	5.7	6.5	6.7	7.1	7.4	6.2	7.0	7.4	7.7	8.1	6.8	7.7	8.0	8.4	8.8
	35	4.0	4.5	4.6	4.8	5.1	4.9	5.5	5.8	6.0	6.3	5.1	5.7	6.0	6.3	6.6	5.6	6.3	6.6	6.9	7.2	6.1	6.9	7.2	7.5	7.9
	40	3.4	3.8	3.9	4.1	4.3	4.3	4.8	5.0	5.2	5.5	4.4	5.0	5.2	5.5	5.7	4.9	5.5	5.8	6.0	6.3	5.4	6.1	6.4	6.7	7.0
	45	2.8	3.1	3.2	3.4	3.5	3.6	4.1	4.2	4.4	4.6	3.8	4.2	4.4	4.6	4.9	4.2	4.7	5.0	5.2	5.4	4.7	5.3	5.5	5.8	6.1
	50	2.2	2.4	2.5	2.6	2.8	3.0	3.3	3.5	3.6	3.8	3.1	3.5	3.7	3.8	4.0	3.6	4.0	4.2	4.4	4.6	4.0	4.5	4.7	4.9	5.2
	52	1.9	2.1	2.2	2.3	2.4	2.7	3.0	3.1	3.3	3.4	2.8	3.2	3.3	3.5	3.6	3.2	3.6	3.8	4.0	4.2	3.7	4.1	4.3	4.5	4.8
20	-25	6.1	6.9	7.2	7.5	7.9	7.1	8.1	8.5	9.0	9.4	7.3	8.4	8.8	9.2	9.7	7.9	9.0	9.5	10.0	10.5	8.5	9.7	10.2	10.8	11.4
	-20	6.1	6.9	7.2	7.5	7.9	7.1	8.1	8.5	8.9	9.4	7.3	8.4	8.8	9.2	9.7	7.9	9.0	9.5	10.0	10.5	8.5	9.7	10.2	10.7	11.3
	-15	6.1	6.9	7.2	7.5	7.9	7.1	8.1	8.5	8.9	9.4	7.3	8.4	8.8	9.2	9.7	7.9	9.0	9.5	9.9	10.5	8.5	9.7	10.2	10.7	11.3
	-10	6.1	6.9	7.2	7.5	7.9	7.1	8.1	8.5	8.9	9.4	7.4	8.4	8.8	9.2	9.7	7.9	9.0	9.5	9.9	10.5	8.5	9.7	10.2	10.7	11.3
	-5	6.1	6.9	7.2	7.5	7.9	7.2	8.1	8.5	8.9	9.4	7.4	8.4	8.8	9.2	9.7	7.9	9.0	9.5	9.9	10.5	8.5	9.7	10.2	10.7	11.3
	0	6.1	6.9	7.2	7.5	7.9	7.2	8.1	8.5	8.9	9.4	7.4	8.4	8.8	9.2	9.7	7.9	9.0	9.5	9.9	10.5	8.5	9.7	10.2	10.7	11.3
	5	6.1	6.9	7.2	7.5	7.9	7.2	8.1	8.5	8.9	9.3	7.4	8.4	8.8	9.2	9.6	7.9	9.0	9.4	9.9	10.4	8.5	9.7	10.2	10.7	11.3
	10	6.1	6.9	7.2	7.5	7.8	7.2	8.1	8.5	8.9	9.3	7.4	8.4	8.7	9.2	9.6	7.9	9.0	9.4	9.9	10.4	8.5	9.7	10.2	10.7	11.3
	15	5.7	6.4	6.7	7.0	7.3	6.7	7.6	8.0	8.3	8.8	7.0	7.9	8.2	8.6	9.0	7.5	8.5	8.9	9.3	9.8	8.1	9.2	9.6	10.1	10.8
	20	5.2	5.8	6.1	6.4	6.7	6.2	7.0	7.3	7.7	8.0	6.4	7.2	7.6	7.9	8.3	6.9	7.9	8.2	8.6	9.0	7.5	8.5	8.9	9.3	9.8
	25	4.6	5.2	5.4	5.7	6.0	5.6	6.3	6.6	6.9	7.3	5.8	6.6	6.9	7.2	7.5	6.3	7.2	7.5	7.8	8.2	6.9	7.8	8.2	8.5	9.0
	30	4.1	4.6	4.8	5.0	5.2	5.0	5.6	5.9	6.2	6.5	5.2	5.9	6.1	6.4	6.7	5.7	6.4	6.7	7.0	7.4	6.2	7.0	7.3	7.7	8.1
	35	3.5	3.9	4.1	4.3	4.5	4.4	4.9	5.2	5.4	5.7	4.6	5.2	5.4	5.6	5.9	5.0	5.7	5.9	6.2	6.5	5.5	6.3	6.5	6.9	7.3
	40	2.9	3.3	3.4	3.5	3.7	3.8	4.2	4.4	4.6	4.8	3.9	4.4	4.6	4.8	5.1	4.4	4.9	5.2	5.4	5.7	4.9	5.5	5.7	6.0	6.3
	45	2.3	2.6	2.7	2.8	3.0	3.2	3.5	3.7	3.9	4.0	3.3	3.7	3.9	4.1	4.3	3.7	4.2	4.4	4.6	4.8	4.2	4.7	4.9	5.2	5.4
	50	1.8	2.0	2.1	2.2	2.3	2.6	2.9	3.0	3.1	3.3	2.7	3.0	3.2	3.3	3.5	3.1	3.5	3.6	3.8	4.0	3.5	4.0	4.2	4.4	4.6
	30	-30	6.2	7.0	7.3	7.7	8.1	7.3	8.3	8.7	9.1	9.6	7.5	8.5	8.9	9.4	9.9	8.0	9.2	9.6	10.1	10.7	8.6	9.9	10.4	10.9
-25		6.2	7.0	7.3	7.7	8.0	7.2	8.2	8.6	9.1	9.5	7.5	8.5	8.9	9.3	9.8	8.0	9.1	9.6	10.1	10.6	8.6	9.8	10.3	10.9</	

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																									
		13500					13000					12500					11500					10500					
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
D	-25	8.8	10.1	10.7	11.3	12.0	9.5	10.9	11.5	12.2	13.0	10.2	11.8	12.5	13.2	14.1	11.8	13.8	14.6	15.5	16.6	13.8	16.2	17.2	18.4	19.7	
	-20	8.8	10.1	10.7	11.3	12.0	9.5	10.9	11.5	12.2	12.9	10.2	11.8	12.5	13.2	14.0	11.9	13.8	14.6	15.5	16.5	13.8	16.2	17.2	18.3	19.6	
	-15	8.8	10.1	10.7	11.3	11.9	9.5	11.0	11.5	12.2	12.9	10.2	11.8	12.5	13.2	14.0	11.9	13.8	14.6	15.5	16.5	13.9	16.2	17.2	18.3	19.6	
	-10	8.8	10.2	10.7	11.3	11.9	9.5	11.0	11.5	12.2	12.9	10.3	11.8	12.5	13.2	14.0	11.9	13.8	14.6	15.5	16.5	13.9	16.2	17.2	18.3	19.6	
	-5	8.8	10.2	10.7	11.3	11.9	9.5	11.0	11.5	12.2	12.9	10.3	11.8	12.5	13.2	14.0	11.9	13.8	14.6	15.5	16.5	13.9	16.2	17.2	18.3	19.5	
	0	8.8	10.1	10.7	11.2	11.9	9.5	10.9	11.5	12.1	12.9	10.3	11.8	12.4	13.1	13.9	11.9	13.8	14.6	15.4	16.4	13.9	16.2	17.2	18.2	19.5	
	5	8.8	10.1	10.6	11.2	11.8	9.5	10.9	11.5	12.1	12.8	10.2	11.8	12.4	13.1	13.9	11.9	13.8	14.5	15.4	16.3	13.9	16.2	17.1	18.2	19.4	
	10	8.8	10.1	10.6	11.2	11.8	9.5	10.9	11.5	12.1	12.8	10.2	11.8	12.4	13.1	13.8	11.9	13.8	14.5	15.4	16.3	13.9	16.2	17.1	18.2	19.3	
	15	8.8	10.1	10.6	11.1	11.8	9.5	10.9	11.4	12.1	12.7	10.2	11.8	12.4	13.1	13.8	11.9	13.8	14.5	15.3	16.3	13.9	16.2	17.1	18.1	19.3	
	20	8.7	9.9	10.4	10.9	11.5	9.3	10.7	11.2	11.8	12.5	10.1	11.6	12.1	12.8	13.5	11.7	13.5	14.3	15.1	16.0	13.7	15.9	16.8	17.8	19.0	
10	-25	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	-20	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	-15	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	-10	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	-5	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	0	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	5	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	10	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	15	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
	20	8.5	9.7	10.2	10.7	11.3	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.6	13.3	11.5	13.3	14.0	14.8	15.7	13.5	15.6	16.5	17.5	18.6	
20	-25	7.2	8.2	8.6	9.0	9.5	7.8	8.9	9.3	9.8	10.4	8.5	9.7	10.2	10.7	11.3	10.0	11.5	12.1	12.7	13.5	11.8	13.6	14.4	15.2	16.1	
	-20	6.5	7.3	7.7	8.1	8.5	7.0	8.0	8.4	8.8	9.3	7.7	8.8	9.2	9.7	10.2	9.1	10.4	11.0	11.6	12.3	10.8	12.5	13.2	13.9	14.8	
	-15	5.7	6.5	6.8	7.1	7.5	6.3	7.1	7.5	7.8	8.3	6.9	7.8	8.2	8.6	9.1	8.2	9.4	9.9	10.4	11.0	9.8	11.4	12.0	12.6	13.4	
	-10	5.0	5.6	5.9	6.2	6.5	5.5	6.2	6.5	6.9	7.2	6.1	6.9	7.2	7.6	8.0	7.3	8.4	8.8	9.3	9.8	8.9	10.2	10.8	11.4	12.1	
	-5	4.3	4.9	5.1	5.4	5.7	4.8	5.5	5.7	6.0	6.3	5.4	6.1	6.4	6.7	7.1	6.6	7.6	7.9	8.4	8.8	8.1	9.3	9.8	10.3	11.0	
	0	9.0	10.3	10.9	11.5	12.1	9.6	11.1	11.7	12.4	13.1	10.4	12.0	12.7	13.4	14.2	12.0	14.0	14.8	15.7	16.7	14.0	16.4	17.4	18.6	19.8	
	-20	9.0	10.3	10.8	11.4	12.1	9.6	11.1	11.7	12.4	13.1	10.4	12.0	12.6	13.4	14.2	12.0	14.0	14.8	15.7	16.7	14.0	16.4	17.4	18.5	19.8	
	-15	9.0	10.3	10.8	11.4	12.1	9.7	11.1	11.7	12.4	13.1	10.4	12.0	12.6	13.4	14.2	12.1	14.0	14.8	15.7	16.7	14.1	16.4	17.4	18.5	19.8	
	-10	9.0	10.3	10.8	11.4	12.1	9.7	11.1	11.7	12.4	13.1	10.4	12.0	12.6	13.4	14.2	12.1	14.0	14.8	15.7	16.7	14.1	16.4	17.4	18.5	19.7	
	-5	9.0	10.3	10.8	11.4	12.1	9.7	11.1	11.7	12.3	13.0	10.4	12.0	12.6	13.3	14.1	12.1	14.0	14.8	15.6	16.6	14.1	16.4	17.4	18.5	19.7	
30	0	9.0	10.3	10.8	11.4	12.0	9.7	11.1	11.7	12.3	13.0	10.4	12.0	12.6	13.3	14.1	12.1	14.0	14.7	15.6	16.5	14.1	16.4	17.3	18.4	19.6	
	5	9.0	10.3	10.8	11.3	12.0	9.7	11.1	11.6	12.3	12.9	10.4	12.0	12.6	13.3	14.0	12.1	14.0	14.7	15.6	16.5	14.1	16.4	17.3	18.4	19.5	
	10	9.0	10.3	10.8	11.1	11.7	9.5	10.9	11.4	12.0	12.7	10.3	11.8	12.4	13.0	13.8	11.9	13.7	14.5	15.3	16.2	13.9	16.1	17.1	18.1	19.2	
	15	8.9	10.1	10.6	11.1	11.7	9.1	10.4	11.0	11.5	12.2	9.9	11.3	11.9	12.5	13.2	11.5	13.2	13.9	14.7	15.6	13.4	15.6	16.4	17.4	18.5	
	20	8.5	9.7	10.1	10.6	11.2	9.7	9.9	10.4	10.9	11.5	9.4	10.7	11.3	11.9	12.5	11.0	12.6	13.3	14.0	14.8	12.9	14.9	15.7	16.6	17.7	
	25	8.0	9.2	9.6	10.1	10.6	8.7	9.9	10.4	10.9	11.5	9.4	10.7	11.3	11.9	12.5	11.0	12.6	13.3	14.0	14.8	12.9	14.9	15.7	16.6	17.7	
	30	7.3	8.3	8.7	9.2	9.7	8.0	9.1	9.5	10.0	10.5	8.6	9.9	10.3	10.9	11.5	10.1	11.6	12.3	12.9	13.7	12.0	13.8	14.6	15.4	16.4	
	35	6.6	7.5	7.9	8.3	8.7	7.2	8.2	8.6	9.0	9.5	7.9	9.0	9.4	9.9	10.4	9.3	10.7	11.2	11.8	12.5	11.0	12.7	13.4	14.2	15.1	
	40	5.9	6.7	7.0	7.3	7.7	6.5	7.4	7.7	8.1	8.5	7.1	8.1	8.5	8.9	9.4	8.5	9.7	10.2	10.7	11.3	10.1	11.6	12.3	13.0	13.7	
	45	5.2	5.9	6.1	6.4	6.8	5.7	6.5	6.8	7.1	7.5	6.3	7.2	7.5	7.9	8.3	7.6	8.7	9.1	9.6	10.2	9.2	10.6	11.1	11.7	12.4	
40	50	4.5	5.1	5.3	5.5	5.8	5.0	5.7	5.9	6.2	6.5	5.5	6.3	6.6	6.9	7.3	6.8	7.7	8.1	8.6	9.0	8.3	9.5	10.0	10.6	11.2	
	52	4.1	4.7	4.9	5.1	5.4	4.6	5.2	5.5	5.8	6.1	5.2	5.9	6.1	6.5	6.8	6.4	7.3	7.6	8.0	8.5	7.8	9.0	9.5	10.0	10.6	
	2	-25	9.1	10.5	11.0	11.6	12.3	9.8	11.3	11.9	12.6	13.3	10.6	12.2	12.8	13.6	14.4	12.2	14.2	15.0	15.9	16.9	14.2	16.6	17.6	18.7	20.0
	-20	9.1	10.5	11.0	11.6	12.3	9.8	11.3	11.9	12.5	13.3	10.6	12.2	12.8	13.5	14.4	12.2	14.2	15.0	15.9	16.9	14.2	16.6	17.6	18.7	20.0	
	-15	9.1	10.5	11.0	11.6	12.2	9.8	11.3	11.9	12.5	13.2	10.6	12.2	12.8	13.5	14.3	12.3	14.2	15.0	15.9	16.8	14.3	16.6	17.6	18.7	19.9	
	-10	9.2	10.5	11.0	11.6	12.2	9.8	11.3	11.9	12.5	13.2	10.6	12.2	12.8	13.5	14.3	12.3	14.2	15.0	15.8	16.8	14.3	16.6	17.6	18.7	19.9	
	-5	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.5	13.2	10.6	12.2	12.8	13.5	14.3	12.3	14.2	15.0	15.8	16.8	14.3	16.6	17.6	18.7	19.9	
	0	9.2	10.5	11.0	11.6	12.2	9.9	11.3	11.9	12.5	13.2	10.6	12.2	12.8	13.5	14.3	12.3	14.2	15.0	15.8	16.8	14.3</					

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15⁰CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		★ 16300					15200					15000					14500					14000									
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS									
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	6.3	7.1	7.4	7.8	8.2	7.4	8.4	8.8	9.2	9.7	7.6	8.6	9.0	9.5	10.0	8.2	9.3	9.7	10.2	10.8	8.8	10.0	10.5	11.0	11.7	8.8	10.0	10.5	11.0	11.6
	-25	6.3	7.1	7.4	7.8	8.2	7.4	8.4	8.8	9.2	9.7	7.6	8.6	9.0	9.5	10.0	8.2	9.3	9.7	10.2	10.8	8.8	10.0	10.5	11.0	11.6	8.8	10.0	10.5	11.0	11.6
	-20	6.3	7.1	7.4	7.8	8.2	7.4	8.4	8.8	9.2	9.7	7.6	8.6	9.0	9.5	10.0	8.2	9.3	9.7	10.2	10.7	8.8	10.0	10.5	11.0	11.6	8.8	10.0	10.5	11.0	11.6
	-15	6.3	7.1	7.4	7.8	8.1	7.4	8.4	8.8	9.2	9.6	7.6	8.6	9.0	9.5	9.9	8.2	9.3	9.7	10.2	10.7	8.8	10.0	10.5	11.0	11.6	8.8	10.0	10.5	11.0	11.6
	-10	6.3	7.1	7.4	7.8	8.1	7.4	8.4	8.8	9.2	9.6	7.6	8.6	9.0	9.4	9.9	8.2	9.3	9.7	10.2	10.7	8.8	10.0	10.5	11.0	11.6	8.8	10.0	10.5	11.0	11.6
	-5	6.3	7.1	7.4	7.8	8.1	7.4	8.4	8.7	9.2	9.6	7.6	8.6	9.0	9.4	9.9	8.2	9.3	9.7	10.2	10.7	8.8	10.0	10.4	11.0	11.5	8.8	10.0	10.4	11.0	11.5
	0	6.1	6.8	7.1	7.5	7.8	7.2	8.1	8.4	8.8	9.3	7.4	8.3	8.7	9.1	9.6	7.9	9.0	9.4	9.8	10.3	8.5	9.7	10.1	10.6	11.2	8.5	9.7	10.1	10.6	11.2
	5	5.8	6.5	6.8	7.1	7.4	6.9	7.7	8.1	8.5	8.9	7.1	8.0	8.3	8.7	9.2	7.6	8.6	9.0	9.4	9.9	8.2	9.3	9.7	10.2	10.7	8.2	9.3	9.7	10.2	10.7
	10	5.4	6.0	6.3	6.5	6.8	6.4	7.2	7.5	7.9	8.2	6.6	7.4	7.8	8.1	8.5	7.1	8.0	8.4	8.8	9.2	7.7	8.7	9.1	9.5	10.0	7.7	8.7	9.1	9.5	10.0
	15	4.8	5.4	5.6	5.8	6.1	5.8	6.5	6.8	7.1	7.4	6.0	6.7	7.0	7.4	7.7	6.5	7.3	7.7	8.0	8.4	7.0	8.0	8.3	8.7	9.1	6.4	7.2	7.5	7.9	8.3
	20	4.2	4.7	4.9	5.2	5.4	5.2	5.8	6.1	6.4	6.7	5.4	6.0	6.3	6.6	6.9	5.9	6.6	6.9	7.2	7.6	6.4	7.2	7.5	7.9	8.3	5.8	6.5	6.8	7.1	7.4
	25	3.7	4.1	4.3	4.5	4.7	4.6	5.2	5.4	5.6	5.9	4.8	5.4	5.6	5.8	6.1	5.3	5.9	6.2	6.4	6.8	5.8	6.5	6.8	7.1	7.4	5.3	6.0	6.3	6.6	6.9
	30	3.1	3.5	3.6	3.8	4.0	4.0	4.5	4.7	4.9	5.1	4.2	4.7	4.9	5.1	5.3	4.6	5.2	5.4	5.7	5.9	5.1	5.8	6.0	6.3	6.6	4.9	5.5	5.8	6.1	6.4
	35	2.6	2.9	3.0	3.1	3.3	3.4	3.9	4.0	4.2	4.4	3.6	4.0	4.2	4.4	4.6	4.0	4.5	4.7	4.9	5.2	4.5	5.1	5.3	5.5	5.8	4.5	5.1	5.3	5.5	5.8
	40	2.1	2.3	2.4	2.5	2.6	2.9	3.2	3.3	3.5	3.7	3.0	3.4	3.5	3.7	3.9	3.4	3.9	4.0	4.2	4.4	3.9	4.4	4.6	4.8	5.0	4.3	4.8	5.0	5.2	5.4
	45	1.5	1.7	1.8	1.9	1.9	2.3	2.6	2.7	2.8	2.9	2.5	2.8	2.9	3.0	3.1	2.9	3.2	3.3	3.5	3.6	3.3	3.7	3.8	4.0	4.2	3.6	4.0	4.2	4.4	4.6
	46	1.4	1.5	1.6	1.7	1.7	2.1	2.4	2.5	2.6	2.7	2.3	2.6	2.7	2.8	2.9	2.7	3.0	3.1	3.3	3.4	3.1	3.5	3.6	3.8	3.9	3.3	3.7	3.8	3.9	4.2
5000	-35	6.5	7.3	7.6	8.0	8.4	7.6	8.6	9.0	9.4	9.9	7.8	8.8	9.3	9.7	10.2	8.4	9.5	10.0	10.5	11.0	9.0	10.2	10.7	11.3	11.9	9.0	10.2	10.7	11.2	11.9
	-30	6.5	7.3	7.6	8.0	8.4	7.6	8.6	9.0	9.4	9.9	7.8	8.8	9.2	9.7	10.2	8.3	9.5	9.9	10.4	11.0	9.0	10.2	10.7	11.2	11.9	9.0	10.2	10.7	11.2	11.9
	-25	6.4	7.3	7.6	7.9	8.3	7.5	8.5	8.9	9.4	9.8	7.8	8.8	9.2	9.6	10.1	8.3	9.5	9.9	10.4	10.9	8.9	10.2	10.7	11.2	11.8	8.9	10.2	10.7	11.2	11.8
	-20	6.4	7.2	7.5	7.9	8.3	7.5	8.5	8.9	9.3	9.8	7.7	8.8	9.2	9.6	10.1	8.3	9.4	9.9	10.3	10.9	8.9	10.1	10.6	11.1	11.7	8.9	10.1	10.6	11.1	11.7
	-15	6.3	7.1	7.4	7.8	8.2	7.4	8.4	8.8	9.2	9.6	7.7	8.7	9.0	9.5	9.9	8.2	9.3	9.7	10.2	10.7	8.8	10.0	10.5	11.0	11.6	8.8	10.0	10.5	11.0	11.6
	-10	6.2	6.9	7.2	7.6	7.9	7.3	8.2	8.6	9.0	9.4	7.5	8.4	8.8	9.2	9.7	8.0	9.1	9.5	10.0	10.5	8.6	9.8	10.2	10.7	11.3	8.6	9.8	10.2	10.7	11.3
	-5	6.0	6.7	7.0	7.3	7.7	7.1	7.9	8.3	8.7	9.1	7.3	8.2	8.6	9.0	9.4	7.8	8.8	9.2	9.7	10.2	8.4	9.5	10.0	10.4	11.0	8.4	9.5	10.0	10.4	11.0
	0	5.7	6.4	6.6	6.9	7.2	6.7	7.6	7.9	8.3	8.7	6.9	7.8	8.1	8.5	8.9	7.5	8.4	8.8	9.2	9.7	8.0	9.1	9.5	10.0	10.5	8.0	9.1	9.5	10.0	10.5
	5	5.4	6.0	6.3	6.5	6.8	6.4	7.2	7.5	7.8	8.2	6.6	7.4	7.7	8.1	8.5	7.1	8.0	8.4	8.8	9.2	7.7	8.7	9.1	9.5	10.0	7.7	8.7	9.1	9.5	10.0
	10	4.8	5.4	5.6	5.9	6.1	5.8	6.5	6.8	7.1	7.5	6.0	6.8	7.0	7.4	7.7	6.5	7.3	7.7	8.0	8.4	7.1	8.0	8.3	8.7	9.2	6.5	7.3	7.6	8.0	8.3
	15	4.3	4.8	5.0	5.2	5.4	5.2	5.9	6.1	6.4	6.7	5.4	6.1	6.4	6.6	7.0	5.9	6.7	7.0	7.3	7.6	6.5	7.3	7.6	8.0	8.3	6.5	7.3	7.6	8.0	8.3
	20	3.8	4.2	4.4	4.5	4.7	4.7	5.2	5.5	5.7	6.0	4.9	5.4	5.7	5.9	6.2	5.3	6.0	6.3	6.5	6.8	5.8	6.6	6.9	7.2	7.5	5.8	6.6	6.9	7.2	7.5
	25	3.2	3.6	3.7	3.9	4.1	4.1	4.6	4.8	5.0	5.2	4.3	4.8	5.0	5.2	5.5	4.7	5.3	5.5	5.8	6.1	5.2	5.9	6.1	6.4	6.7	5.2	5.9	6.1	6.4	6.7
	30	2.7	3.0	3.1	3.3	3.4	3.5	4.0	4.1	4.3	4.5	3.7	4.2	4.3	4.5	4.7	4.2	4.7	4.9	5.1	5.3	4.6	5.2	5.4	5.7	5.9	4.6	5.2	5.4	5.7	5.9
	35	2.2	2.4	2.5	2.6	2.8	3.0	3.4	3.5	3.6	3.8	3.2	3.5	3.7	3.8	4.0	3.6	4.0	4.2	4.4	4.6	4.0	4.5	4.7	4.9	5.2	4.0	4.5	4.7	4.9	5.2
	40	1.7	1.9	1.9	2.0	2.1	2.4	2.7	2.8	3.0	3.1	2.6	2.9	3.0	3.2	3.3	3.0	3.4	3.5	3.6	3.8	3.4	3.8	4.0	4.2	4.4	3.4	3.8	4.0	4.2	4.4
	44	1.2	1.3	1.4	1.5	1.5	1.9	2.2	2.3	2.4	2.5	2.1	2.3	2.4	2.5	2.6	2.5	2.8	2.9	3.0	3.1	2.9	3.2	3.4	3.5	3.7	3.1	3.2	3.4	3.5	3.7
6000	-35	6.6	7.5	7.8	8.2	8.6	7.8	8.8	9.2	9.6	10.1	8.0	9.0	9.5	9.9	10.4	8.6	9.7	10.2	10.7	11.2	9.2	10.4	10.9	11.5	12.1	9.2	10.4	10.9	11.5	12.1
	-30	6.6	7.5	7.8	8.1	8.5	7.7	8.8	9.2	9.6	10.1	8.0	9.0	9.4	9.9	10.4	8.5	9.7	10.1	10.6	11.2	9.2	10.4	10.9	11.5	12.1	9.2	10.4	10.9	11.5	12.1
	-25	6.6	7.4	7.7	8.1	8.4	7.7	8.7	9.1	9.5	10.0	7.9	8.9	9.3	9.8	10.3	8.5	9.6	10.1	10.5	11.1	9.1	10.3	10.8	11.4	11.9	9.1	10.3	10.8	11.4	11.9
	-20	6.5	7.3	7.6	8.0	8.4	7.6	8.6	9.0	9.4	9.9	7.9	8.9	9.3	9.7	10.2	8.4	9.5	10.0	10.4	11.0	9.0	10.3	10.7	11.3	11.8	9.0	10.3	10.7	11.3	11.8
	-15	6.2	7.0	7.3	7.6	8.0	7.3	8.3	8.6	9.0	9.5	7.5	8.5	8.9	9.3	9.8	8.1	9.2	9.6	10.0	10.5	8.7	9.9	10.3	10.8	11.4	8.7	9.9	10.3	10.8	11.4
	-10	5.9	6.6	6.9	7.2	7.5	7.0	7.9	8.2	8.6	9.0	7.2	8.1	8.5	8.8	9.3	7.7	8.7	9.1	9.6	10.0	8.3	9.4	9.9	10.3	10.8	8.3	9.4	9.9	10.3	10.8
	-5	5.6	6.2	6.5	6.8	7.1	6.6	7.4	7.8	8.1	8.5	6.8	7.7	8.0	8.4	8.8	7.4	8.3	8.7	9.1	9.5	7.9	9.0	9.4	9.8	10.3	7.9	9.0	9.4	9.8	10.3
	0	5.2	5.8	6.1	6.3	6.6	6.2	7.0	7.3	7.6	8.0	6.4	7.2	7.6	7.9	8.3	7.0	7.8	8.2	8.6	9.0	7.5	8.5	8.9	9.3	9.8	7.5	8.5	8.9	9.3	9.8
	5	4.8	5.4	5.6	5.8	6.1	5.8	6.5	6.8	7.1	7.4	6.0	6.7	7.0	7.3	7.7	6.5	7.3	7.6	8.0	8.4	7.1	8.0	8.3	8.7	9.1	7.1	8.0	8.3	8.7	9.1
	10	4.3	4.8	5.0	5.2	5.4	5.3	5.9	6.1	6.4	6.7	5.5	6.1	6.4	6.7	7.0	5.9	6													

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		13500					13000					12500					11500					10500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
40 0 0 0 0 0 0 0 0 0 0	-30	9.4	10.8	11.3	11.9	12.6	10.1	11.6	12.2	12.8	13.6	10.9	12.5	13.1	13.9	14.7	12.6	14.5	15.3	16.2	17.2	14.6	17.0	18.0	19.1	20.3
	-25	9.4	10.7	11.3	11.9	12.5	10.1	11.6	12.2	12.8	13.5	10.8	12.5	13.1	13.8	14.6	12.5	14.5	15.3	16.2	17.2	14.6	16.9	17.9	19.0	20.2
	-20	9.4	10.7	11.3	11.9	12.5	10.1	11.6	12.2	12.8	13.5	10.9	12.5	13.1	13.8	14.6	12.6	14.5	15.3	16.2	17.1	14.6	17.0	17.9	19.0	20.2
	-15	9.4	10.8	11.3	11.9	12.5	10.1	11.6	12.2	12.8	13.5	10.9	12.5	13.1	13.8	14.6	12.6	14.5	15.3	16.1	17.1	14.6	17.0	17.9	19.0	20.2
	-10	9.4	10.7	11.3	11.8	12.5	10.1	11.6	12.1	12.8	13.5	10.9	12.5	13.1	13.8	14.6	12.6	14.5	15.3	16.1	17.1	14.6	16.9	17.9	18.9	20.1
	-5	9.4	10.7	11.2	11.8	12.4	10.1	11.6	12.1	12.7	13.4	10.9	12.4	13.1	13.8	14.5	12.6	14.5	15.2	16.1	17.0	14.6	16.9	17.8	18.9	20.0
	0	9.2	10.4	10.9	11.5	12.1	9.9	11.2	11.8	12.4	13.0	10.6	12.1	12.7	13.4	14.1	12.3	14.1	14.8	15.6	16.5	14.3	16.5	17.4	18.4	19.5
	5	8.8	10.0	10.5	11.0	11.6	9.5	10.8	11.3	11.9	12.6	10.3	11.7	12.3	12.9	13.6	11.9	13.6	14.3	15.1	16.0	13.9	16.0	16.9	17.8	18.9
	10	8.3	9.4	9.9	10.3	10.9	9.0	10.2	10.7	11.2	11.8	9.7	11.0	11.6	12.1	12.8	11.3	12.9	13.6	14.3	15.1	13.2	15.2	16.0	16.9	17.9
	15	7.6	8.6	9.0	9.5	10.0	8.3	9.4	9.8	10.3	10.8	9.0	10.2	10.7	11.2	11.8	10.5	12.0	12.6	13.3	14.0	12.3	14.2	14.9	15.8	16.7
30 0 0 0 0 0 0 0 0 0 0	20	7.0	7.9	8.2	8.6	9.1	7.6	8.6	9.0	9.4	9.9	8.2	9.4	9.8	10.3	10.8	9.7	11.1	11.6	12.3	12.9	11.5	13.2	13.9	14.6	15.5
	25	6.3	7.1	7.4	7.8	8.2	6.9	7.8	8.2	8.5	9.0	7.5	8.5	8.9	9.4	9.9	8.9	10.2	10.7	11.3	11.9	10.6	12.2	12.8	13.5	14.3
	30	5.6	6.4	6.6	7.0	7.3	6.2	7.0	7.3	7.7	8.1	6.8	7.7	8.1	8.5	8.9	8.2	9.3	9.8	10.3	10.8	9.8	11.2	11.8	12.4	13.1
	35	5.0	5.6	5.9	6.2	6.5	5.5	6.3	6.5	6.8	7.2	6.1	6.9	7.2	7.6	8.0	7.4	8.4	8.8	9.3	9.8	9.0	10.3	10.8	11.4	12.0
	40	4.4	4.9	5.1	5.4	5.6	4.9	5.5	5.7	6.0	6.3	5.4	6.1	6.4	6.7	7.1	6.7	7.6	7.9	8.3	8.8	8.1	9.3	9.8	10.3	10.9
	45	3.7	4.2	4.4	4.6	4.8	4.2	4.7	5.0	5.2	5.4	4.7	5.4	5.6	5.9	6.2	5.9	6.7	7.0	7.4	7.8	7.3	8.4	8.8	9.2	9.7
	46	3.5	4.0	4.1	4.3	4.5	4.0	4.5	4.7	4.9	5.2	4.5	5.1	5.3	5.6	5.9	5.7	6.5	6.8	7.1	7.5	7.1	8.1	8.5	8.9	9.4
	-35	9.6	11.0	11.6	12.2	12.8	10.3	11.8	12.5	13.1	13.9	11.1	12.8	13.4	14.2	15.0	12.8	14.8	15.6	16.5	17.6	14.9	17.3	18.3	19.4	20.7
	-30	9.6	11.0	11.5	12.1	12.8	10.3	11.8	12.4	13.1	13.8	11.1	12.7	13.4	14.1	14.9	12.8	14.8	15.6	16.5	17.5	14.9	17.3	18.2	19.4	20.6
	-25	9.6	10.9	11.5	12.1	12.7	10.3	11.8	12.4	13.0	13.7	11.1	12.7	13.3	14.0	14.8	12.8	14.7	15.5	16.4	17.4	14.8	17.2	18.2	19.3	20.5
20 0 0 0 0 0 0 0 0 0 0	-20	9.6	10.9	11.4	12.0	12.7	10.3	11.7	12.3	13.0	13.7	11.0	12.6	13.3	14.0	14.8	12.8	14.7	15.5	16.3	17.3	14.8	17.2	18.1	19.2	20.4
	-15	9.5	10.8	11.3	11.9	12.5	10.2	11.6	12.2	12.8	13.5	10.9	12.5	13.1	13.8	14.6	12.7	14.5	15.3	16.2	17.1	14.7	17.0	17.9	19.0	20.2
	-10	9.3	10.5	11.0	11.6	12.2	10.0	11.4	11.9	12.5	13.2	10.7	12.2	12.8	13.5	14.3	12.4	14.3	15.0	15.8	16.7	14.4	16.7	17.6	18.6	19.7
	-5	9.0	10.3	10.7	11.3	11.9	9.7	11.1	11.6	12.2	12.8	10.5	11.9	12.5	13.2	13.9	12.1	13.9	14.6	15.4	16.3	14.1	16.3	17.2	18.2	19.3
	0	8.7	9.8	10.3	10.8	11.3	9.3	10.6	11.1	11.7	12.3	10.1	11.5	12.0	12.6	13.3	11.7	13.4	14.1	14.8	15.7	13.7	15.7	16.6	17.5	18.5
	5	8.3	9.4	9.8	10.3	10.8	9.0	10.2	10.6	11.2	11.7	9.7	11.0	11.5	12.1	12.7	11.3	12.9	13.5	14.3	15.0	13.2	15.2	16.0	16.9	17.8
	10	7.7	8.7	9.1	9.5	10.0	8.3	9.4	9.8	10.3	10.9	9.0	10.2	10.7	11.2	11.8	10.5	12.0	12.6	13.3	14.0	12.4	14.2	14.9	15.8	16.7
	15	7.0	7.9	8.3	8.7	9.1	7.6	8.6	9.0	9.5	10.0	8.3	9.4	9.9	10.3	10.9	9.8	11.2	11.7	12.3	13.0	11.6	13.3	13.9	14.7	15.5
	20	6.4	7.2	7.5	7.9	8.3	7.0	7.9	8.2	8.6	9.1	7.6	8.6	9.0	9.5	10.0	9.0	10.3	10.8	11.4	12.0	10.7	12.3	12.9	13.6	14.4
	25	5.7	6.5	6.8	7.1	7.4	6.3	7.1	7.5	7.8	8.2	6.9	7.8	8.2	8.6	9.0	8.3	9.4	9.9	10.4	11.0	9.9	11.4	11.9	12.6	13.3
10 0 0 0 0 0 0 0 0 0 0	30	5.1	5.8	6.0	6.3	6.6	5.7	6.4	6.7	7.0	7.3	6.2	7.1	7.4	7.7	8.1	7.6	8.6	9.0	9.5	10.0	9.1	10.4	10.9	11.5	12.1
	35	4.5	5.1	5.3	5.5	5.8	5.0	5.7	5.9	6.2	6.5	5.6	6.3	6.6	6.9	7.2	6.8	7.8	8.1	8.5	9.0	8.3	9.5	10.0	10.5	11.1
	40	3.9	4.4	4.6	4.8	5.0	4.4	4.9	5.1	5.4	5.6	4.9	5.5	5.8	6.1	6.4	6.1	6.9	7.2	7.6	8.0	7.5	8.6	9.0	9.5	10.0
	44	3.3	3.7	3.9	4.1	4.3	3.8	4.3	4.4	4.7	4.9	4.3	4.8	5.1	5.3	5.6	5.4	6.2	6.4	6.8	7.1	6.8	7.7	8.1	8.5	9.0
	-35	9.8	11.2	11.8	12.4	13.1	10.6	12.1	12.7	13.3	14.1	11.3	13.0	13.7	14.4	15.2	13.1	15.1	15.9	16.8	17.8	15.2	17.6	18.6	19.7	21.0
	-30	9.8	11.2	11.7	12.3	13.0	10.5	12.0	12.6	13.3	14.0	11.3	13.0	13.6	14.3	15.1	13.1	15.0	15.8	16.7	17.7	15.1	17.6	18.5	19.6	20.9
	-25	9.8	11.1	11.6	12.2	12.9	10.5	11.9	12.5	13.2	13.9	11.3	12.9	13.5	14.2	15.0	13.0	14.9	15.7	16.6	17.6	15.1	17.4	18.4	19.5	20.7
	-20	9.7	11.0	11.6	12.1	12.8	10.4	11.9	12.4	13.1	13.8	11.2	12.8	13.4	14.1	14.9	12.9	14.8	15.6	16.5	17.4	15.0	17.3	18.3	19.3	20.5
	-15	9.4	10.6	11.1	11.7	12.3	10.1	11.4	12.0	12.6	13.3	10.8	12.3	12.9	13.6	14.4	12.5	14.4	15.1	15.9	16.8	14.6	16.8	17.7	18.7	19.9
	-10	9.0	10.2	10.6	11.2	11.7	9.7	11.0	11.5	12.1	12.7	10.4	11.8	12.4	13.0	13.7	12.1	13.8	14.5	15.3	16.1	14.0	16.2	17.0	18.0	19.1
0 0 0 0 0 0 0 0 0 0 0	-5	8.6	9.7	10.1	10.6	11.2	9.2	10.5	11.0	11.5	12.1	9.9	11.3	11.9	12.5	13.1	11.6	13.2	13.9	14.6	15.4	13.5	15.5	16.4	17.3	18.3
	0	8.1	9.2	9.6	10.1	10.6	8.8	10.0	10.4	10.9	11.5	9.5	10.8	11.3	11.9	12.5	11.1	12.7	13.3	14.0	14.7	13.0	14.9	15.7	16.5	17.5
	5	7.6	8.6	9.0	9.5	9.9	8.3	9.4	9.8	10.3	10.8	9.0	10.2	10.6	11.2	11.8	10.5	12.0	12.6	13.2	13.9	12.3	14.2	14.9	15.7	16.6
	10	7.0	7.9	8.3	8.7	9.1	7.7	8.7	9.1	9.5	10.0	8.3	9.4	9.9	10.3	10.9	9.8	11.2	11.7	12.3	13.0	11.6	13.3	13.9	14.7	15.5
	15	6.4	7.3	7.6	7.9	8.3	7.0	7.9	8.3	8.7	9.1	7.7	8.7	9.1	9.5	10.0	9.1	10.4	10.9	11.4	12.0	10.8	12.4	13.0	13.7	14.5
	20	5.8	6.6	6.9	7.2	7.5	6.4	7.2	7.5	7.9	8.3	7.0	7.9	8.3	8.7	9.1	8.4									

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15°

CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		★ 16300						15200						15000						14500						14000					
		WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS					
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8 0 0 0 0 0 0 0 0 0	-35	6.3	7.1	7.4	7.7	8.1	7.4	8.3	8.7	9.1	9.6	7.6	8.6	9.0	9.4	9.9	8.2	9.3	9.7	10.1	10.7	8.8	10.0	10.4	10.9	11.5	8.8	10.0	10.4	10.9	11.5
	-30	6.0	6.7	7.0	7.3	7.7	7.1	8.0	8.3	8.7	9.1	7.3	8.2	8.6	9.0	9.4	7.9	8.9	9.3	9.7	10.2	8.5	9.6	10.0	10.5	11.0	8.5	9.6	10.0	10.5	11.0
	-25	5.7	6.4	6.7	7.0	7.3	6.8	7.6	8.0	8.3	8.7	7.0	7.9	8.2	8.6	9.0	7.5	8.5	8.9	9.3	9.7	8.1	9.2	9.6	10.0	10.5	8.1	9.2	9.6	10.0	10.5
	-20	5.4	6.1	6.3	6.6	6.9	6.5	7.3	7.6	7.9	8.3	6.7	7.5	7.8	8.2	8.6	7.2	8.1	8.5	8.9	9.3	7.8	8.8	9.2	9.6	10.1	7.8	8.8	9.2	9.6	10.1
	-15	5.1	5.7	6.0	6.2	6.5	6.1	6.9	7.2	7.5	7.9	6.3	7.1	7.4	7.8	8.1	6.9	7.7	8.1	8.4	8.8	7.4	8.4	8.8	9.2	9.6	7.4	8.4	8.8	9.2	9.6
	-10	4.8	5.4	5.6	5.9	6.1	5.8	6.5	6.8	7.1	7.4	6.0	6.8	7.0	7.4	7.7	6.5	7.3	7.7	8.0	8.4	7.1	8.0	8.3	8.7	9.1	7.1	8.0	8.3	8.7	9.1
	-5	4.5	5.0	5.2	5.5	5.7	5.5	6.1	6.4	6.7	7.0	5.7	6.4	6.6	6.9	7.2	6.2	6.9	7.2	7.6	7.9	6.7	7.6	7.9	8.2	8.6	6.7	7.6	7.9	8.2	8.6
	0	4.2	4.7	4.9	5.1	5.3	5.1	5.7	6.0	6.2	6.5	5.3	6.0	6.2	6.5	6.8	5.8	6.5	6.8	7.1	7.4	6.3	7.1	7.4	7.8	8.1	6.3	7.1	7.4	7.8	8.1
	5	3.8	4.2	4.4	4.5	4.7	4.7	5.2	5.5	5.7	5.9	4.9	5.4	5.7	5.9	6.2	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.5	5.9	6.6	6.9	7.2	7.5
	10	3.4	3.7	3.9	4.0	4.2	4.2	4.7	4.9	5.1	5.4	4.4	4.9	5.1	5.4	5.6	4.9	5.5	5.7	5.9	6.2	5.4	6.0	6.3	6.6	6.9	5.4	6.0	6.3	6.6	6.9
15	2.9	3.2	3.3	3.5	3.6	3.7	4.2	4.3	4.5	4.7	3.9	4.4	4.5	4.7	4.9	4.4	4.9	5.1	5.3	5.5	4.8	5.4	5.6	5.9	6.2	4.8	5.4	5.6	5.9	6.2	
20	2.4	2.7	2.8	2.9	3.0	3.2	3.6	3.8	3.9	4.1	3.4	3.8	3.9	4.1	4.3	3.8	4.3	4.4	4.6	4.8	4.3	4.8	5.0	5.2	5.4	4.3	4.8	5.0	5.2	5.4	
25	1.9	2.1	2.2	2.3	2.4	2.7	3.0	3.2	3.3	3.4	2.9	3.2	3.3	3.5	3.6	3.3	3.7	3.8	4.0	4.2	3.7	4.2	4.3	4.5	4.7	3.7	4.2	4.3	4.5	4.7	
30	1.5	1.6	1.7	1.7	1.8	2.2	2.5	2.6	2.7	2.8	2.4	2.6	2.7	2.8	3.0	2.8	3.1	3.2	3.3	3.5	3.2	3.5	3.7	3.8	4.0	3.2	3.5	3.7	3.8	4.0	
35	1.0	1.1	1.1	1.2	1.2	1.7	1.9	2.0	2.0	2.1	1.8	2.1	2.1	2.2	2.3	2.2	2.5	2.6	2.7	2.8	2.6	2.9	3.0	3.2	3.3	2.6	2.9	3.0	3.2	3.3	
38	.6	.7	.7	.8	.8	1.3	1.5	1.6	1.6	1.7	1.5	1.6	1.7	1.8	1.9	1.8	2.1	2.1	2.2	2.3	2.2	2.5	2.6	2.7	2.8	2.2	2.5	2.6	2.7	2.8	
9 0 0 0 0 0 0 0 0 0	-35	5.7	6.4	6.7	7.0	7.3	6.8	7.6	8.0	8.3	8.7	7.0	7.9	8.2	8.6	9.0	7.6	8.5	8.9	9.3	9.8	8.1	9.2	9.6	10.1	10.6	8.1	9.2	9.6	10.1	10.6
	-30	5.5	6.1	6.4	6.6	6.9	6.5	7.3	7.6	7.9	8.3	6.7	7.5	7.9	8.2	8.6	7.2	8.2	8.5	8.9	9.3	7.8	8.8	9.2	9.6	10.1	7.8	8.8	9.2	9.6	10.1
	-25	5.2	5.8	6.0	6.3	6.6	6.2	6.9	7.2	7.6	7.9	6.4	7.2	7.5	7.8	8.2	6.9	7.8	8.1	8.5	8.9	7.5	8.4	8.8	9.2	9.7	7.5	8.4	8.8	9.2	9.7
	-20	4.9	5.5	5.7	5.9	6.2	5.9	6.6	6.9	7.2	7.5	6.1	6.8	7.1	7.4	7.8	6.6	7.4	7.7	8.1	8.5	7.2	8.1	8.4	8.8	9.2	7.2	8.1	8.4	8.8	9.2
	-15	4.6	5.1	5.4	5.6	5.8	5.6	6.3	6.5	6.8	7.1	5.8	6.5	6.8	7.0	7.4	6.3	7.1	7.4	7.7	8.0	6.8	7.7	8.0	8.4	8.8	6.8	7.7	8.0	8.4	8.8
	-10	4.3	4.8	5.0	5.2	5.4	5.3	5.9	6.1	6.4	6.7	5.5	6.1	6.4	6.6	6.9	6.0	6.7	7.0	7.3	7.6	6.5	7.3	7.6	7.9	8.3	6.5	7.3	7.6	7.9	8.3
	-5	4.0	4.5	4.6	4.8	5.0	4.9	5.5	5.8	6.0	6.3	5.1	5.7	6.0	6.2	6.5	5.6	6.3	6.6	6.8	7.2	6.1	6.9	7.2	7.5	7.8	6.1	6.9	7.2	7.5	7.8
	0	3.7	4.1	4.2	4.4	4.6	4.6	5.1	5.3	5.6	5.8	4.8	5.3	5.5	5.8	6.0	5.2	5.9	6.1	6.4	6.7	5.7	6.4	6.7	7.0	7.3	5.7	6.4	6.7	7.0	7.3
	5	3.3	3.7	3.8	4.0	4.1	4.2	4.7	4.9	5.1	5.3	4.4	4.9	5.1	5.3	5.5	4.8	5.4	5.6	5.9	6.1	5.3	6.0	6.2	6.5	6.8	5.3	6.0	6.2	6.5	6.8
	10	2.9	3.2	3.3	3.5	3.6	3.8	4.2	4.4	4.5	4.7	3.9	4.4	4.6	4.7	5.0	4.4	4.9	5.1	5.3	5.5	4.8	5.4	5.7	5.9	6.2	4.8	5.4	5.7	5.9	6.2
15	2.4	2.7	2.8	2.9	3.0	3.3	3.6	3.8	3.9	4.1	3.4	3.8	4.0	4.1	4.3	3.9	4.3	4.5	4.7	4.9	4.3	4.8	5.0	5.2	5.5	4.3	4.8	5.0	5.2	5.5	
20	2.0	2.2	2.3	2.4	2.5	2.8	3.1	3.2	3.3	3.5	2.9	3.3	3.4	3.5	3.7	3.3	3.7	3.9	4.0	4.2	3.8	4.2	4.4	4.6	4.8	4.3	4.2	4.4	4.6	4.8	
25	1.5	1.7	1.7	1.8	1.9	2.3	2.5	2.6	2.7	2.8	2.4	2.7	2.8	2.9	3.0	2.8	3.1	3.3	3.4	3.5	3.2	3.6	3.8	3.9	4.1	3.2	3.6	3.8	3.9	4.1	
30	1.0	1.2	1.2	1.2	1.3	1.8	2.0	2.0	2.1	2.2	1.9	2.1	2.2	2.3	2.4	2.3	2.6	2.7	2.8	2.9	2.7	3.0	3.1	3.3	3.4	2.7	3.0	3.1	3.3	3.4	
35	.6	.7	.7	.7	.7	1.3	1.4	1.5	1.5	1.6	1.4	1.6	1.7	1.7	1.8	1.8	2.0	2.1	2.2	2.2	2.2	2.4	2.5	2.6	2.7	2.2	2.4	2.5	2.6	2.7	
36	.5	.5	.5	.5	.6	1.1	1.3	1.3	1.4	1.4	1.3	1.4	1.5	1.5	1.6	1.6	1.8	1.9	2.0	2.0	2.0	2.2	2.3	2.4	2.5	2.0	2.2	2.3	2.4	2.5	
1 0 0 0 0 0 0 0 0 0	-35	5.2	5.8	6.0	6.3	6.6	6.2	7.0	7.2	7.6	7.9	6.4	7.2	7.5	7.8	8.2	6.9	7.8	8.1	8.5	8.9	7.5	8.4	8.8	9.2	9.7	7.5	8.4	8.8	9.2	9.7
	-30	4.9	5.5	5.7	5.9	6.2	5.9	6.6	6.9	7.2	7.5	6.1	6.8	7.1	7.5	7.8	6.6	7.4	7.8	8.1	8.5	7.2	8.1	8.4	8.8	9.2	7.2	8.1	8.4	8.8	9.2
	-25	4.6	5.2	5.4	5.6	5.9	5.6	6.3	6.6	6.8	7.1	5.8	6.5	6.8	7.1	7.4	6.3	7.1	7.4	7.7	8.1	6.9	7.7	8.1	8.4	8.8	6.9	7.7	8.1	8.4	8.8
	-20	4.4	4.9	5.1	5.3	5.5	5.3	6.0	6.2	6.5	6.8	5.5	6.2	6.4	6.7	7.0	6.0	6.7	7.0	7.3	7.7	6.5	7.4	7.7	8.0	8.4	6.5	7.4	7.7	8.0	8.4
	-15	4.1	4.6	4.7	4.9	5.1	5.0	5.6	5.9	6.1	6.4	5.2	5.8	6.1	6.3	6.6	5.7	6.4	6.7	7.0	7.3	6.2	7.0	7.3	7.6	8.0	6.2	7.0	7.3	7.6	8.0
	-10	3.8	4.2	4.4	4.6	4.8	4.7	5.3	5.5	5.7	6.0	4.9	5.5	5.7	6.0	6.2	5.4	6.0	6.3	6.6	6.8	5.9	6.6	6.9	7.2	7.5	5.9	6.6	6.9	7.2	7.5
	-5	3.5	3.9	4.1	4.2	4.4	4.4	4.9	5.1	5.3	5.6	4.6	5.1	5.3	5.6	5.8	5.1	5.7	5.9	6.1	6.4	5.6	6.2	6.5	6.8	7.1	5.6	6.2	6.5	6.8	7.1
	0	3.2	3.5	3.7	3.8	4.0	4.1	4.5	4.7	4.9	5.1	4.2	4.7	4.9	5.1	5.4	4.7	5.3	5.5	5.7	5.9	5.2	5.8	6.0	6.3	6.6	5.2	5.8	6.0	6.3	6.6
	5	2.9	3.2	3.3	3.4	3.6	3.7	4.2	4.3	4.5	4.7	3.9	4.3	4.5	4.7	4.9	4.3	4.8	5.0	5.3	5.5	4.8	5.4	5.6	5.8	6.1	4.8	5.4	5.6	5.8	6.1
	10	2.5	2.7	2.8	2.9	3.1	3.3	3.7	3.8	3.9	4.1	3.5	3.8	4.0	4.2	4.3	3.9	4.3	4.5	4.7	4.9	4.3	4.8	5.0	5.3	5.5	4.3	4.8	5.0	5.3	5.5
15	2.0	2.2	2.3	2.4	2.5	2.8	3.1	3.2	3.4	3.5	3.0	3.3	3.4	3.6	3.7	3.4	3.8	3.9	4.1	4.2	3.8	4.3	4.4	4.6	4.8	4.3	4.3	4.4	4.6	4.8	
20	1.6	1.7	1.8	1.9	1.9	2.3																									

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15⁰CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		13500					13000					12500					11500					10500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8000	-35	9.5	10.7	11.2	11.8	12.4	10.2	11.6	12.1	12.7	13.4	10.9	12.5	13.1	13.8	14.5	12.7	14.5	15.3	16.1	17.0	14.7	17.0	17.9	18.9	20.1
	-30	9.1	10.3	10.8	11.3	11.9	9.8	11.1	11.7	12.2	12.9	10.5	12.0	12.6	13.2	14.0	12.2	14.0	14.7	15.5	16.4	14.2	16.4	17.3	18.3	19.4
	-25	8.7	9.9	10.4	10.9	11.4	9.4	10.7	11.2	11.8	12.4	10.2	11.6	12.1	12.7	13.4	11.8	13.5	14.2	14.9	15.8	13.8	15.9	16.7	17.6	18.7
	-20	8.4	9.5	9.9	10.4	10.9	9.1	10.3	10.7	11.3	11.8	9.8	11.1	11.6	12.2	12.8	11.4	13.0	13.7	14.4	15.2	13.3	15.3	16.1	17.0	18.0
	-15	8.0	9.1	9.5	9.9	10.4	8.7	9.8	10.3	10.8	11.3	9.4	10.6	11.2	11.7	12.3	11.0	12.5	13.1	13.8	14.6	12.8	14.7	15.5	16.4	17.3
	-10	7.7	8.7	9.0	9.5	9.9	8.3	9.4	9.8	10.3	10.8	9.0	10.2	10.7	11.2	11.8	10.5	12.0	12.6	13.2	13.9	12.4	14.2	14.9	15.7	16.6
	-5	7.3	8.2	8.6	9.0	9.4	7.9	8.9	9.3	9.8	10.3	8.6	9.7	10.2	10.7	11.2	10.1	11.5	12.0	12.6	13.3	11.9	13.6	14.3	15.1	15.9
	0	6.9	7.8	8.1	8.5	8.9	7.5	8.5	8.8	9.3	9.7	8.2	9.2	9.6	10.1	10.6	9.6	10.9	11.5	12.0	12.7	11.4	13.0	13.7	14.4	15.2
	5	6.4	7.2	7.5	7.9	8.2	7.0	7.9	8.2	8.6	9.0	7.6	8.6	9.0	9.4	9.9	9.0	10.3	10.8	11.3	11.9	10.7	12.3	12.9	13.5	14.3
	10	5.9	6.6	6.9	7.2	7.6	6.5	7.3	7.6	8.0	8.3	7.1	8.0	8.3	8.7	9.2	8.5	9.6	10.0	10.5	11.1	10.1	11.5	12.1	12.7	13.4
15	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.6	6.5	7.3	7.6	8.0	8.4	7.8	8.8	9.3	9.7	10.2	9.4	10.7	11.2	11.8	12.4	
20	4.8	5.4	5.6	5.8	6.1	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.6	7.2	8.1	8.5	8.9	9.3	8.7	9.9	10.3	10.9	11.4	
25	4.2	4.7	4.9	5.1	5.3	4.7	5.3	5.5	5.7	6.0	5.2	5.9	6.2	6.4	6.7	6.5	7.3	7.7	8.0	8.4	7.9	9.0	9.4	9.9	10.4	
30	3.6	4.1	4.2	4.4	4.6	4.1	4.6	4.8	5.0	5.2	4.6	5.2	5.4	5.7	5.9	5.8	6.5	6.8	7.2	7.5	7.2	8.2	8.6	9.0	9.4	
35	3.1	3.4	3.6	3.7	3.9	3.5	3.9	4.1	4.3	4.5	4.0	4.5	4.7	4.9	5.1	5.1	5.8	6.0	6.3	6.6	6.5	7.3	7.7	8.0	8.5	
38	2.6	3.0	3.1	3.2	3.4	3.1	3.5	3.6	3.8	3.9	3.6	4.0	4.2	4.4	4.6	4.7	5.3	5.5	5.7	6.0	5.9	6.7	7.1	7.4	7.8	
9000	-35	8.8	9.9	10.4	10.9	11.5	9.5	10.7	11.2	11.8	12.4	10.2	11.6	12.2	12.8	13.4	11.9	13.6	14.2	15.0	15.8	13.8	15.9	16.8	17.7	18.8
	-30	8.4	9.5	10.0	10.4	11.0	9.1	10.3	10.8	11.3	11.9	9.8	11.2	11.7	12.3	12.9	11.4	13.1	13.7	14.4	15.2	13.4	15.4	16.2	17.1	18.1
	-25	8.1	9.1	9.5	10.0	10.5	8.7	9.9	10.4	10.9	11.4	9.4	10.7	11.2	11.8	12.4	11.0	12.6	13.2	13.9	14.7	12.9	14.8	15.6	16.5	17.4
	-20	7.7	8.7	9.1	9.6	10.0	8.4	9.5	9.9	10.4	10.9	9.1	10.3	10.8	11.3	11.9	10.6	12.1	12.7	13.4	14.1	12.5	14.3	15.0	15.9	16.8
	-15	7.4	8.4	8.7	9.1	9.6	8.0	9.1	9.5	9.9	10.4	8.7	9.9	10.3	10.8	11.4	10.2	11.6	12.2	12.8	13.5	12.0	13.8	14.5	15.3	16.1
	-10	7.1	7.9	8.3	8.7	9.1	7.7	8.6	9.0	9.5	9.9	8.3	9.4	9.8	10.3	10.8	9.8	11.1	11.7	12.3	12.9	11.6	13.2	13.9	14.6	15.4
	-5	6.7	7.5	7.8	8.2	8.6	7.3	8.2	8.6	9.0	9.4	7.9	9.0	9.4	9.8	10.3	9.4	10.7	11.2	11.7	12.3	11.1	12.7	13.3	14.0	14.8
	0	6.3	7.1	7.4	7.7	8.0	6.9	7.7	8.1	8.4	8.8	7.5	8.5	8.8	9.2	9.7	8.9	10.1	10.6	11.1	11.7	10.6	12.1	12.7	13.3	14.0
	5	5.8	6.6	6.8	7.1	7.5	6.4	7.2	7.5	7.9	8.2	7.0	7.9	8.3	8.6	9.1	8.4	9.5	9.9	10.4	11.0	10.0	11.4	12.0	12.6	13.3
	10	5.4	6.0	6.3	6.5	6.8	5.9	6.6	6.9	7.2	7.6	6.5	7.3	7.6	8.0	8.4	7.8	8.9	9.3	9.7	10.2	9.4	10.7	11.2	11.8	12.4
15	4.8	5.4	5.6	5.9	6.1	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.6	7.2	8.1	8.5	8.9	9.3	8.7	9.9	10.4	10.9	11.5	
20	4.3	4.8	5.0	5.2	5.4	4.8	5.3	5.6	5.8	6.1	5.3	6.0	6.2	6.5	6.8	6.5	7.4	7.7	8.1	8.5	8.0	9.1	9.5	10.0	10.5	
25	3.7	4.1	4.3	4.5	4.7	4.2	4.7	4.9	5.1	5.3	4.7	5.3	5.5	5.8	6.0	5.9	6.6	6.9	7.3	7.6	7.3	8.3	8.7	9.1	9.5	
30	3.1	3.5	3.6	3.8	4.0	3.6	4.0	4.2	4.4	4.6	4.1	4.6	4.8	5.0	5.2	5.2	5.9	6.2	6.4	6.7	6.6	7.4	7.8	8.2	8.6	
35	2.6	2.9	3.0	3.1	3.3	3.0	3.4	3.5	3.7	3.9	3.5	3.9	4.1	4.3	4.5	4.6	5.2	5.4	5.7	5.9	5.9	6.7	7.0	7.3	7.7	
36	2.4	2.7	2.8	2.9	3.1	2.9	3.2	3.3	3.5	3.6	3.3	3.7	3.9	4.1	4.2	4.4	5.0	5.2	5.4	5.7	5.7	6.4	6.7	7.0	7.4	
10000	-35	8.1	9.1	9.6	10.0	10.5	8.8	9.9	10.4	10.9	11.4	9.5	10.7	11.2	11.8	12.4	11.1	12.6	13.2	13.9	14.7	13.0	14.9	15.6	16.5	17.5
	-30	7.8	8.8	9.2	9.6	10.1	8.4	9.5	9.9	10.4	10.9	9.1	10.3	10.8	11.3	11.9	10.7	12.2	12.7	13.4	14.1	12.5	14.4	15.1	15.9	16.8
	-25	7.4	8.4	8.8	9.2	9.6	8.1	9.1	9.5	10.0	10.5	8.7	9.9	10.4	10.9	11.4	10.3	11.7	12.3	12.9	13.6	12.1	13.8	14.6	15.3	16.2
	-20	7.1	8.0	8.4	8.8	9.2	7.7	8.7	9.1	9.5	10.0	8.4	9.5	9.9	10.4	10.9	9.9	11.2	11.8	12.4	13.0	11.7	13.3	14.0	14.8	15.6
	-15	6.8	7.6	8.0	8.3	8.7	7.4	8.3	8.7	9.1	9.5	8.0	9.1	9.5	9.9	10.4	9.5	10.8	11.3	11.9	12.5	11.2	12.8	13.5	14.2	15.0
	-10	6.4	7.2	7.5	7.9	8.3	7.0	7.9	8.3	8.6	9.1	7.7	8.6	9.0	9.5	9.9	9.1	10.3	10.8	11.3	11.9	10.8	12.3	12.9	13.6	14.3
	-5	6.1	6.8	7.1	7.4	7.8	6.7	7.5	7.8	8.2	8.6	7.3	8.2	8.6	9.0	9.4	8.7	9.8	10.3	10.8	11.3	10.3	11.8	12.4	13.0	13.7
	0	5.7	6.4	6.7	7.0	7.3	6.3	7.0	7.3	7.7	8.0	6.9	7.7	8.1	8.4	8.8	8.2	9.3	9.7	10.2	10.7	9.9	11.2	11.7	12.3	13.0
	5	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.5	6.5	7.3	7.6	7.9	8.3	7.8	8.8	9.2	9.6	10.1	9.4	10.6	11.1	11.7	12.3
	10	4.8	5.4	5.6	5.9	6.1	5.4	6.0	6.3	6.5	6.8	5.9	6.7	6.9	7.2	7.6	7.2	8.1	8.5	8.9	9.3	8.7	9.9	10.4	10.9	11.4
15	4.3	4.8	5.0	5.2	5.4	4.8	5.4	5.6	5.8	6.1	5.3	6.0	6.3	6.5	6.8	6.6	7.4	7.8	8.1	8.5	8.1	9.1	9.6	10.0	10.5	
20	3.8	4.2	4.4	4.5	4.7	4.2	4.7	4.9	5.2	5.4	4.8	5.3	5.6	5.8	6.1	6.0	6.7	7.0	7.3	7.7	7.4	8.3	8.7	9.1	9.6	
25	3.2	3.6	3.7	3.9	4.0	3.7	4.1	4.3	4.5	4.7	4.2	4.7	4.9	5.1	5.3	5.3	6.0	6.2	6.5	6.8	6.7	7.5	7.9	8.3	8.7	
30	2.7	3.0	3.1	3.2	3.4	3.1	3.5	3.6	3.8	3.9	3.6	4.0	4.2	4.4	4.6	4.7	5.3	5.5	5.7	6.0	6.0	6.8	7.1	7.4	7.8	
34	2.2	2.4	2.5	2.6	2.8	2.6	2.9	3.0	3.2	3.3	3.1	3.5	3.6	3.7	3.9	4.1	4.6	4.8	5.1	5.3	5.4	6.1	6.3	6.6	7.0	
11000	-35	7.5	8.4	8.8	9.2	9.6	8.1	9.1	9.5	10.0	10.5	8.8	9.9	10.4	10.9	11.4	10.3	11.7	12.3	12.9	13.6	12.1	13.9	14.6	15.4	16.2
	-30	7.1	8.0	8.4	8.8	9.2	7.8	8.8	9.1	9.6	10.0	8														

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15⁰CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																													
		★16300						15200						15000						14500						14000					
		WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS						WIND KNOTS					
		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30		-10	0	10	20	30	
1	-35	4.1	4.6	4.8	5.0	5.2	5.1	5.7	5.9	6.1	6.4	6.7	5.2	5.9	6.1	6.4	6.7	7.3	7.3	6.3	6.4	6.7	7.0	7.3	6.3	6.3	7.0	7.3	7.7	8.0	
2	-30	3.9	4.3	4.5	4.7	4.9	4.8	5.4	5.6	5.8	6.1	6.3	5.0	5.6	5.8	6.0	6.3	6.9	6.9	5.5	6.1	6.4	6.6	6.9	5.5	6.0	6.7	7.0	7.3	7.6	
0	-25	3.6	4.0	4.2	4.3	4.5	4.5	5.1	5.3	5.5	5.7	5.9	4.7	5.3	5.5	5.7	5.9	6.6	6.6	5.2	5.8	6.0	6.3	6.6	5.2	5.7	6.4	6.6	6.9	7.2	
0	-20	3.4	3.7	3.9	4.0	4.2	4.3	4.7	4.9	5.1	5.4	5.6	4.4	4.9	5.1	5.4	5.6	6.2	6.2	4.9	5.5	5.7	5.9	6.2	4.9	5.4	6.0	6.3	6.5	6.8	
0	-15	3.1	3.4	3.6	3.7	3.9	4.0	4.4	4.6	4.8	5.0	5.2	4.2	4.6	4.8	5.0	5.2	5.8	5.8	4.6	5.1	5.3	5.6	5.8	4.6	5.1	5.7	5.9	6.2	6.4	
0	-10	2.8	3.2	3.3	3.4	3.5	3.7	4.1	4.3	4.4	4.6	4.8	3.9	4.3	4.5	4.7	4.8	6.4	6.4	4.3	4.8	5.0	5.2	5.4	4.8	5.3	5.6	5.8	6.0	6.0	
	-5	2.6	2.9	3.0	3.1	3.2	3.4	3.8	3.9	4.1	4.3	4.5	3.6	4.0	4.1	4.3	4.5	7.0	7.0	4.0	4.5	4.6	4.8	5.0	4.5	5.0	5.2	5.4	5.6	5.6	
	0	2.3	2.6	2.6	2.7	2.9	3.1	3.5	3.6	3.7	3.9	4.1	3.3	3.6	3.8	3.9	4.1	7.6	7.6	3.7	4.1	4.3	4.5	4.6	4.2	4.6	4.8	5.0	5.2	5.2	
	5	2.0	2.2	2.3	2.3	2.4	2.8	3.1	3.2	3.3	3.4	3.6	2.9	3.2	3.4	3.5	3.6	8.2	8.2	3.3	3.7	3.8	4.0	4.2	3.8	4.2	4.4	4.5	4.7	4.7	
	10	1.6	1.7	1.8	1.9	1.9	2.3	2.6	2.7	2.8	2.9	3.1	2.5	2.8	2.9	3.0	3.1	8.8	8.8	2.9	3.2	3.3	3.5	3.6	3.3	3.7	3.8	4.0	4.0	4.2	
	15	1.2	1.3	1.3	1.4	1.5	1.9	2.1	2.2	2.3	2.4	2.6	2.1	2.3	2.4	2.5	2.6	9.4	9.4	2.5	2.7	2.8	2.9	3.1	2.9	3.2	3.3	3.4	3.6	3.6	
	20	.8	.8	.9	.9	.9	1.5	1.6	1.7	1.8	1.8	2.0	1.6	1.8	1.9	1.9	2.0	10.0	10.0	2.0	2.2	2.3	2.4	2.5	2.4	2.6	2.7	2.8	3.0	3.0	
	25	.3	.4	.4	.4	.4	1.0	1.1	1.2	1.2	1.3	1.3	1.2	1.3	1.3	1.4	1.4	10.6	10.6	1.5	1.7	1.7	1.8	1.9	1.9	2.1	2.2	2.3	2.4	2.4	
	30	.0	.0	.1	.1	.1	.6	.7	.7	.7	.7	.7	.7	.8	.8	.9	.9	11.2	11.2	1.1	1.2	1.2	1.3	1.3	1.4	1.6	1.7	1.7	1.8	1.8	
1	-35	3.6	4.0	4.2	4.3	4.5	4.5	5.0	5.3	5.5	5.7	5.9	4.7	5.3	5.5	5.7	5.9	6.6	6.6	5.2	5.8	6.0	6.3	6.6	5.2	5.7	6.4	6.6	6.9	7.2	
4	-30	3.4	3.8	3.9	4.1	4.2	4.3	4.8	4.9	5.2	5.4	5.6	4.4	5.0	5.2	5.4	5.6	7.2	7.2	4.9	5.5	5.7	5.9	6.2	4.9	5.4	6.0	6.3	6.6	6.9	
0	-25	3.1	3.5	3.6	3.8	3.9	4.0	4.5	4.6	4.8	5.0	5.3	4.2	4.7	4.8	5.0	5.3	7.8	7.8	4.6	5.2	5.4	5.6	5.8	4.6	5.1	5.7	6.0	6.2	6.5	
0	-20	2.9	3.2	3.3	3.5	3.6	3.7	4.2	4.3	4.5	4.7	4.9	3.9	4.4	4.5	4.7	4.9	8.4	8.4	4.4	4.9	5.1	5.3	5.5	4.8	5.4	5.6	5.8	6.1	6.1	
0	-15	2.6	2.9	3.0	3.2	3.3	3.5	3.9	4.0	4.2	4.4	4.6	3.6	4.1	4.2	4.4	4.6	9.0	9.0	4.1	4.5	4.7	4.9	5.1	4.5	5.1	5.3	5.5	5.7	5.7	
0	-10	2.4	2.6	2.7	2.8	3.0	3.2	3.6	3.7	3.8	4.0	4.2	3.4	3.8	3.9	4.0	4.2	9.6	9.6	3.8	4.2	4.4	4.6	4.8	4.3	4.7	4.9	5.1	5.4	5.4	
	-5	2.1	2.4	2.4	2.5	2.6	2.9	3.3	3.4	3.5	3.7	3.9	3.1	3.4	3.6	3.7	3.9	10.2	10.2	3.5	3.9	4.1	4.2	4.4	4.0	4.4	4.6	4.8	5.0	5.0	
	0	1.9	2.1	2.1	2.2	2.3	2.7	2.9	3.1	3.2	3.3	3.5	2.8	3.1	3.2	3.4	3.5	10.8	10.8	3.2	3.6	3.7	3.9	4.0	3.7	4.1	4.2	4.4	4.6	4.6	
	5	1.5	1.7	1.7	1.8	1.9	2.3	2.5	2.6	2.7	2.8	3.0	2.4	2.7	2.8	2.9	3.0	11.4	11.4	2.8	3.1	3.3	3.4	3.5	3.3	3.6	3.8	3.9	4.1	4.1	
	10	1.2	1.3	1.3	1.4	1.4	1.9	2.1	2.2	2.3	2.4	2.6	2.1	2.3	2.4	2.4	2.5	12.0	12.0	2.4	2.7	2.8	2.9	3.0	2.8	3.2	3.3	3.4	3.6	3.6	
	15	.8	.9	.9	.9	1.0	1.5	1.7	1.7	1.8	1.8	2.0	1.6	1.8	1.9	1.9	2.0	12.6	12.6	2.0	2.2	2.3	2.4	2.5	2.4	2.7	2.8	2.9	3.0	3.0	
	20	.4	.4	.4	.5	.5	1.1	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.4	1.4	1.5	13.2	13.2	1.6	1.7	1.8	1.9	1.9	1.9	2.1	2.2	2.3	2.4	2.4	
	25	.0	.0	.0	.0	.0	.6	.7	.7	.8	.8	.8	.8	.9	.9	.9	1.0	13.8	13.8	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.8	
	28	-.3	-.3	-.3	-.3	-.4	.3	.4	.4	.4	.4	.4	.5	.5	.5	.5	.6	14.4	14.4	.8	.9	.9	.9	1.0	1.1	1.3	1.3	1.4	1.4	1.4	
1	-35	3.1	3.5	3.6	3.7	3.9	4.0	4.5	4.6	4.8	5.0	5.2	4.2	4.6	4.8	5.0	5.2	6.0	6.0	4.6	5.2	5.4	5.6	5.8	4.6	5.1	5.7	5.9	6.2	6.5	
4	-30	2.9	3.2	3.3	3.5	3.6	3.8	4.2	4.3	4.5	4.7	4.9	3.9	4.4	4.5	4.7	4.9	6.6	6.6	4.4	4.9	5.1	5.3	5.5	4.8	5.4	5.6	5.9	6.1	6.1	
0	-25	2.7	2.9	3.1	3.2	3.3	3.5	3.9	4.0	4.2	4.4	4.6	3.7	4.1	4.2	4.4	4.6	7.2	7.2	4.1	4.6	4.7	4.9	5.1	4.6	5.1	5.3	5.5	5.8	5.8	
0	-20	2.4	2.7	2.8	2.9	3.0	3.3	3.6	3.7	3.9	4.1	4.3	3.4	3.8	3.9	4.1	4.3	7.8	7.8	3.8	4.3	4.4	4.6	4.8	4.3	4.8	5.0	5.2	5.4	5.4	
0	-15	2.2	2.4	2.5	2.6	2.7	3.0	3.3	3.5	3.6	3.7	3.9	3.2	3.5	3.6	3.8	3.9	8.4	8.4	3.6	4.0	4.1	4.3	4.5	4.0	4.5	4.7	4.8	5.0	5.0	
	-10	1.9	2.2	2.2	2.3	2.4	2.7	3.0	3.1	3.3	3.4	3.6	2.9	3.2	3.3	3.5	3.6	9.0	9.0	3.3	3.7	3.8	4.0	4.1	3.7	4.2	4.3	4.5	4.7	4.7	
	-5	1.7	1.9	1.9	2.0	2.1	2.5	2.7	2.8	2.9	3.1	3.3	2.6	2.9	3.0	3.1	3.3	9.6	9.6	3.0	3.4	3.5	3.6	3.8	3.5	3.8	4.0	4.1	4.3	4.3	
	0	1.4	1.6	1.6	1.7	1.7	2.2	2.4	2.5	2.6	2.7	2.9	2.3	2.6	2.7	2.8	2.9	10.2	10.2	2.7	3.0	3.1	3.2	3.4	3.1	3.5	3.6	3.8	3.9	3.9	
	5	1.1	1.2	1.3	1.3	1.4	1.8	2.0	2.1	2.2	2.3	2.5	2.0	2.2	2.3	2.4	2.5	10.8	10.8	2.4	2.6	2.7	2.8	2.9	2.8	3.1	3.2	3.3	3.4	3.4	
	10	.8	.9	.9	.9	1.0	1.5	1.6	1.7	1.8	1.8	2.0	1.6	1.8	1.9	1.9	2.0	11.4	11.4	2.0	2.2	2.3	2.4	2.5	2.4	2.7	2.8	2.9	3.0	3.0	
	15	.4	.4	.5	.5	.5	1.1	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.4	1.4	1.5	12.0	12.0	1.6	1.7	1.8	1.9	1.9	2.0	2.2	2.2	2.3	2.4	2.4	
	20	.0	.0	.0	.0	.0	.7	.7	.8	.8	.8	.8	.8	.9	.9	1.0	1.0	12.6	12.6	1.1	1.3	1.3	1.4	1.4	1.5	1.7	1.7	1.8	1.8	1.8	
	25	-.4	-.4	-.4	-.4	-.4	.3	.3	.3	.3	.3	.3	.4	.4	.4	.5	.5	13.2	13.2	.7	.8	.8	.8	.9	1.1	1.2	1.2	1.3	1.3	1.3	
	28	-.5	-.5	-.6	-.6	-.6	.1	.1	.1	.1	.2	.2	.2	.3	.3	.3	.3	13.8	13.8	.6	.6	.6	.7	.7	.9	1.0	1.0	1.1	1.1	1.1	

* FOR ANTI-ICE SYSTEMS ON, SUBTRACT 3 FROM ABOVE CLIMB GRADIENTS.

★ For use in an emergency which requires a landing at a weight in excess of maximum design landing weight of 15,200 pounds.



Figure 4-38 (Sheet 7 of 8)

APPROACH GROSS CLIMB GRADIENT - PERCENT

FLAPS - 15⁰CONDITIONS: ANTI-ICE SYSTEMS - OFF *
LANDING GEAR - UP
AIRSPEED - VAPPSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING
OPERATIVE ENGINE - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																														
		13500					13000					12500					11500					10500										
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS										
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
1 0 0 0 0 0 0 0 0 0	-35	6.8	7.7	8.0	8.4	8.8	7.4	8.4	8.7	9.1	9.6	8.1	9.1	9.5	10.0	10.5	9.6	10.9	11.4	11.9	12.6	11.3	12.9	13.6	14.3	15.1	10.9	12.5	13.1	13.7	14.5	
	-30	6.5	7.3	7.6	8.0	8.4	7.1	8.0	8.4	8.7	9.2	7.8	8.8	9.1	9.6	10.0	9.2	10.4	10.9	11.5	12.1	10.9	12.5	13.1	13.7	14.5	10.5	12.0	12.6	13.2	13.9	
	-25	6.2	7.0	7.3	7.6	7.9	6.8	7.6	8.0	8.3	8.7	7.4	8.4	8.7	9.1	9.6	8.8	10.0	10.5	11.0	11.5	10.5	12.0	12.6	13.2	13.9	10.5	12.0	12.6	13.2	13.9	
	-20	5.9	6.6	6.9	7.2	7.5	6.5	7.3	7.6	7.9	8.3	7.1	8.0	8.3	8.7	9.1	8.5	9.6	10.0	10.5	11.0	10.1	11.5	12.1	12.7	13.3	9.7	11.0	11.6	12.1	12.7	
	-15	5.6	6.3	6.5	6.8	7.1	6.2	6.9	7.2	7.5	7.9	6.8	7.6	7.9	8.3	8.7	8.1	9.2	9.6	10.0	10.5	9.7	11.0	11.6	12.1	12.8	9.7	11.0	11.6	12.1	12.8	
	-10	5.3	5.9	6.2	6.4	6.7	5.8	6.5	6.8	7.1	7.4	7.4	6.4	7.2	7.5	7.9	8.2	7.7	8.7	9.1	9.6	10.0	9.3	10.6	11.1	11.6	12.2	9.3	10.6	11.1	11.6	12.2
	-5	5.0	5.6	5.8	6.0	6.3	5.5	6.2	6.4	6.7	7.0	6.1	6.8	7.1	7.4	7.8	7.4	8.3	8.7	9.1	9.5	8.9	10.1	10.6	11.1	11.6	8.9	10.1	10.6	11.1	11.6	
	0	4.6	5.2	5.4	5.6	5.9	5.2	5.8	6.0	6.3	6.6	5.7	6.4	6.7	7.0	7.3	7.0	7.9	8.2	8.6	9.0	8.5	9.6	10.1	10.5	11.1	8.5	9.6	10.1	10.5	11.1	
	5	4.2	4.7	4.9	5.1	5.4	4.8	5.3	5.5	5.8	6.0	5.3	5.9	6.2	6.4	6.7	6.5	7.3	7.7	8.0	8.4	8.0	9.0	9.4	9.9	10.4	8.0	9.0	9.4	9.9	10.4	
	10	3.8	4.2	4.4	4.6	4.8	4.3	4.8	5.0	5.2	5.4	4.8	5.4	5.6	5.8	6.1	6.0	6.7	7.0	7.3	7.7	7.4	8.3	8.7	9.1	9.6	7.4	8.3	8.7	9.1	9.6	
15	3.3	3.7	3.8	4.0	4.1	3.8	4.2	4.4	4.6	4.8	4.3	4.8	5.0	5.2	5.4	5.4	6.1	6.4	6.6	6.9	6.8	7.7	8.0	8.4	8.8	6.8	7.7	8.0	8.4	8.8		
20	2.8	3.1	3.2	3.4	3.5	3.3	3.6	3.8	3.9	4.1	3.7	4.2	4.3	4.5	4.7	4.8	5.4	5.7	5.9	6.2	6.2	6.9	7.2	7.6	7.9	6.2	6.9	7.2	7.6	7.9		
25	2.3	2.6	2.7	2.8	2.9	2.7	3.0	3.2	3.3	3.4	3.2	3.6	3.7	3.9	4.0	4.3	4.8	5.0	5.2	5.4	5.5	6.2	6.5	6.8	7.1	5.5	6.2	6.5	6.8	7.1		
30	1.8	2.0	2.1	2.2	2.3	2.2	2.5	2.6	2.7	2.8	2.7	3.0	3.1	3.2	3.4	3.7	4.1	4.3	4.5	4.7	4.9	5.5	5.7	6.0	6.3	4.9	5.5	5.7	6.0	6.3		
1 3 0 0 0 0 0 0 0 0	-35	6.2	7.0	7.3	7.6	7.9	6.8	7.6	8.0	8.3	8.7	7.4	8.4	8.7	9.1	9.6	8.8	10.0	10.5	11.0	11.5	10.5	12.0	12.6	13.2	13.9	10.5	12.0	12.6	13.2	13.9	
	-30	5.9	6.6	6.9	7.2	7.6	6.5	7.3	7.6	8.0	8.3	7.1	8.0	8.4	8.7	9.2	8.5	9.6	10.1	10.5	11.1	10.2	11.6	12.1	12.7	13.4	10.2	11.6	12.1	12.7	13.4	
	-25	5.6	6.3	6.6	6.9	7.2	6.2	6.9	7.2	7.6	7.9	6.8	7.6	8.0	8.3	8.7	8.2	9.2	9.6	10.1	10.6	9.8	11.1	11.6	12.2	12.8	9.8	11.1	11.6	12.2	12.8	
	-20	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.5	6.5	7.3	7.6	7.9	8.3	7.8	8.8	9.2	9.6	10.1	9.4	10.6	11.2	11.7	12.3	9.4	10.6	11.2	11.7	12.3	
	-15	5.0	5.6	5.9	6.1	6.4	5.6	6.2	6.5	6.8	7.1	6.2	6.9	7.2	7.5	7.9	7.5	8.4	8.8	9.2	9.6	9.0	10.2	10.7	11.2	11.8	9.0	10.2	10.7	11.2	11.8	
	-10	4.7	5.3	5.5	5.7	6.0	5.3	5.9	6.1	6.4	6.7	5.8	6.5	6.8	7.1	7.4	7.1	8.0	8.4	8.7	9.2	8.6	9.8	10.2	10.7	11.2	8.6	9.8	10.2	10.7	11.2	
	-5	4.4	4.9	5.1	5.4	5.6	4.9	5.5	5.8	6.0	6.3	5.5	6.2	6.4	6.7	7.0	6.7	7.6	7.9	8.3	8.7	8.2	9.3	9.7	10.2	10.7	8.2	9.3	9.7	10.2	10.7	
	0	4.1	4.6	4.8	5.0	5.2	4.6	5.2	5.4	5.6	5.8	5.2	5.8	6.0	6.3	6.6	6.4	7.2	7.5	7.8	8.2	7.8	8.8	9.2	9.7	10.2	7.8	8.8	9.2	9.7	10.2	
	5	3.7	4.1	4.3	4.5	4.7	4.2	4.7	4.9	5.1	5.3	4.7	5.3	5.5	5.7	6.0	5.9	6.6	6.9	7.2	7.5	7.3	8.2	8.6	9.0	9.5	7.3	8.2	8.6	9.0	9.5	
	10	3.3	3.7	3.8	3.9	4.1	3.8	4.2	4.4	4.5	4.7	4.3	4.8	5.0	5.2	5.4	5.4	6.1	6.3	6.6	6.9	6.8	7.6	8.0	8.3	8.7	6.8	7.6	8.0	8.3	8.7	
15	2.8	3.1	3.3	3.4	3.5	3.3	3.6	3.8	3.9	4.1	3.8	4.2	4.4	4.6	4.7	4.9	5.5	5.7	5.9	6.2	6.2	7.0	7.3	7.6	8.0	6.2	7.0	7.3	7.6	8.0		
20	2.3	2.6	2.7	2.8	2.9	2.8	3.1	3.2	3.3	3.5	3.2	3.6	3.8	3.9	4.1	4.3	4.8	5.0	5.2	5.5	5.6	6.3	6.5	6.8	7.2	5.6	6.3	6.5	6.8	7.2		
25	1.9	2.1	2.1	2.2	2.3	2.3	2.5	2.6	2.7	2.9	2.7	3.0	3.2	3.3	3.4	3.8	4.2	4.4	4.6	4.8	5.0	5.6	5.8	6.1	6.4	5.0	5.6	5.8	6.1	6.4		
28	1.5	1.7	1.7	1.8	1.9	1.9	2.1	2.2	2.3	2.4	2.4	2.6	2.7	2.8	3.0	3.3	3.7	3.9	4.1	4.2	4.5	5.1	5.3	5.5	5.8	4.5	5.1	5.3	5.5	5.8		
1 4 0 0 0 0 0 0 0 0	-35	5.6	6.3	6.6	6.8	7.2	6.2	6.9	7.2	7.5	7.9	6.8	7.6	8.0	8.3	8.7	8.1	9.2	9.6	10.1	10.6	9.8	11.1	11.6	12.2	12.8	9.8	11.1	11.6	12.2	12.8	
	-30	5.3	6.0	6.2	6.5	6.8	5.9	6.6	6.9	7.2	7.5	6.5	7.3	7.6	7.9	8.3	7.8	8.8	9.2	9.6	10.1	9.4	10.7	11.2	11.7	12.3	9.4	10.7	11.2	11.7	12.3	
	-25	5.1	5.7	5.9	6.1	6.4	5.6	6.3	6.5	6.8	7.1	6.2	6.9	7.2	7.5	7.9	7.5	8.4	8.8	9.2	9.7	9.0	10.2	10.7	11.2	11.8	9.0	10.2	10.7	11.2	11.8	
	-20	4.8	5.3	5.6	5.8	6.0	5.3	5.9	6.2	6.4	6.7	5.9	6.6	6.9	7.2	7.5	7.2	8.1	8.4	8.8	9.2	8.7	9.8	10.3	10.8	11.3	8.7	9.8	10.3	10.8	11.3	
	-15	4.5	5.0	5.2	5.4	5.7	5.0	5.6	5.8	6.1	6.3	5.6	6.2	6.5	6.8	7.1	6.8	7.7	8.0	8.4	8.8	8.3	9.4	9.8	10.3	10.8	8.3	9.4	9.8	10.3	10.8	
	-10	4.2	4.7	4.9	5.1	5.3	4.7	5.3	5.5	5.7	6.0	5.3	5.9	6.1	6.4	6.7	6.5	7.3	7.6	7.9	8.3	7.9	9.0	9.4	9.8	10.3	7.9	9.0	9.4	9.8	10.3	
	-5	3.9	4.4	4.5	4.7	4.9	4.4	4.9	5.1	5.3	5.6	4.9	5.5	5.7	6.0	6.3	6.1	6.9	7.2	7.5	7.8	7.6	8.5	8.9	9.3	9.8	7.6	8.5	8.9	9.3	9.8	
	0	3.6	4.0	4.1	4.3	4.5	4.1	4.5	4.7	4.9	5.1	4.6	5.1	5.3	5.6	5.8	5.8	6.5	6.7	7.0	7.3	7.1	8.1	8.4	8.8	9.2	7.1	8.1	8.4	8.8	9.2	
	5	3.2	3.6	3.7	3.8	4.0	3.7	4.1	4.3	4.4	4.6	4.2	4.7	4.9	5.1	5.3	5.3	6.0	6.2	6.5	6.8	6.7	7.5	7.8	8.2	8.6	6.7	7.5	7.8	8.2	8.6	
	10	2.8	3.1	3.2	3.4	3.5	3.3	3.6	3.8	3.9	4.1	3.8	4.2	4.4	4.5	4.7	4.9	5.5	5.7	5.9	6.2	6.2	7.0	7.3	7.6	7.9	6.2	7.0	7.3	7.6	7.9	
15	2.4	2.6	2.7	2.8	2.9	2.8	3.1	3.2	3.4	3.5	3.3	3.6	3.8	3.9	4.1	4.3	4.8	5.0	5.3	5.5	5.6	6.3	6.6	6.8	7.2	5.6	6.3	6.6	6.8	7.2		
20	1.9	2.1	2.2	2.3	2.4	2.3	2.6	2.7	2.8	2.9	2.8	3.1	3.2	3.3	3.5	3.8	4.2	4.4	4.6	4.8	5.0	5.6	5.9	6.1	6.4	5.0	5.6	5.9	6.1	6.4		
25	1.4	1.6	1.6	1.7	1.8	1.8	2.0	2.1	2.2	2.3	2.3	2.5	2.6	2.7	2.8	3.3	3.6	3.8	3.9	4.1	4.4	4.9	5.2	5.4	5.6	4.4	4.9	5.2	5.4	5.6		
26	1.3	1.4	1.5	1.5	1.6	1.7	1.9	1.9	2.0	2.1	2.1	2.3	2.4	2.5	2.6	3.1	3.4	3.6	3.7	3.9	4.2	4.7	4.9	5.1	5.5	4.4	4.7	4.9	5.1	5.5		

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		* 16300					15200					15000					14500					14000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
0	-25	15.8	18.1	19.1	20.2	21.3	18.0	20.7	21.9	23.1	24.6	18.4	21.3	22.4	23.7	25.2	19.5	22.6	23.9	25.3	26.9	20.7	24.1	25.5	27.0	28.8
	-20	15.8	18.1	19.1	20.1	21.3	18.0	20.7	21.9	23.1	24.5	18.4	21.3	22.4	23.7	25.1	19.5	22.6	23.9	25.3	26.9	20.8	24.1	25.5	27.0	28.7
	-15	15.8	18.1	19.1	20.1	21.3	18.0	20.7	21.9	23.1	24.5	18.4	21.3	22.4	23.7	25.1	19.6	22.6	23.9	25.3	26.8	20.8	24.1	25.5	27.0	28.7
	-10	15.9	18.2	19.1	20.1	21.3	18.0	20.8	21.9	23.1	24.5	18.5	21.3	22.4	23.7	25.1	19.6	22.7	23.9	25.3	26.8	20.8	24.1	25.5	27.0	28.7
	-5	15.9	18.2	19.1	20.1	21.2	18.1	20.8	21.9	23.1	24.4	18.5	21.3	22.4	23.7	25.1	19.6	22.7	23.9	25.2	26.8	20.9	24.1	25.5	26.9	28.6
	0	15.9	18.1	19.0	20.0	21.1	18.1	20.7	21.8	23.0	24.3	18.5	21.2	22.4	23.6	25.0	19.6	22.6	23.8	25.2	26.7	20.9	24.1	25.4	26.9	28.5
	5	15.9	18.1	19.0	20.0	21.1	18.0	20.7	21.8	22.9	24.2	18.5	21.2	22.3	23.5	24.9	19.6	22.6	23.8	25.1	26.6	20.8	24.0	25.3	26.8	28.4
	10	15.9	18.1	19.0	19.9	21.0	18.0	20.7	21.7	22.9	24.2	18.5	21.2	22.3	23.5	24.8	19.6	22.5	23.7	25.0	26.5	20.8	24.0	25.3	26.7	28.3
	15	15.9	18.0	18.9	19.9	21.0	18.0	20.6	21.7	22.8	24.1	18.5	21.2	22.2	23.4	24.7	19.6	22.5	23.7	25.0	26.4	20.9	24.0	25.3	26.7	28.3
	20	15.6	17.7	18.6	19.5	20.5	17.8	20.3	21.3	22.4	23.7	18.2	20.8	21.8	23.0	24.3	19.3	22.1	23.3	24.5	25.9	20.5	23.6	24.8	26.2	27.8
	25	15.3	17.4	18.2	19.1	20.1	17.5	19.9	20.9	22.0	23.2	17.9	20.4	21.5	22.6	23.8	19.0	21.8	22.9	24.1	25.5	20.2	23.2	24.4	25.7	27.2
	30	14.3	16.2	17.0	17.8	18.8	16.4	18.7	19.6	20.6	21.7	16.8	19.1	20.1	21.1	22.3	17.8	20.4	21.4	22.6	23.8	19.0	21.8	22.9	24.1	25.5
	35	13.1	14.8	15.5	16.3	17.1	15.0	17.1	18.0	18.9	19.9	15.4	17.6	18.4	19.4	20.4	16.4	18.8	19.7	20.7	21.9	17.5	20.1	21.1	22.2	23.5
	40	11.8	13.4	14.0	14.7	15.4	13.7	15.6	16.3	17.1	18.0	14.1	16.0	16.8	17.6	18.6	15.0	17.1	18.0	18.9	19.9	16.1	18.4	19.3	20.3	21.4
	45	10.6	11.9	12.5	13.1	13.7	12.3	14.0	14.7	15.4	16.2	12.7	14.4	15.1	15.8	16.7	13.6	15.5	16.2	17.0	18.0	14.6	16.6	17.4	18.3	19.4
	50	9.3	10.5	11.0	11.5	12.1	11.0	12.5	13.0	13.7	14.4	11.3	12.8	13.4	14.1	14.8	12.2	13.8	14.5	15.2	16.1	13.1	14.9	15.7	16.5	17.4
	54	8.3	9.3	9.7	10.2	10.7	9.8	11.2	11.7	12.2	12.9	10.2	11.5	12.1	12.6	13.3	11.0	12.5	13.1	13.7	14.4	11.9	13.5	14.2	14.9	15.7
1	-25	16.1	18.4	19.4	20.4	21.6	18.3	21.1	22.2	23.4	24.8	18.7	21.6	22.7	24.0	25.5	19.8	23.0	24.2	25.6	27.2	21.1	24.4	25.8	27.4	29.1
	-20	16.1	18.4	19.4	20.4	21.6	18.3	21.0	22.2	23.4	24.8	18.7	21.6	22.7	24.0	25.4	19.9	22.9	24.2	25.6	27.2	21.1	24.4	25.8	27.3	29.0
	-15	16.1	18.4	19.4	20.4	21.5	18.3	21.0	22.2	23.4	24.8	18.7	21.6	22.7	24.0	25.4	19.9	23.0	24.2	25.6	27.1	21.1	24.4	25.8	27.3	29.0
	-10	16.1	18.4	19.4	20.4	21.5	18.3	21.1	22.2	23.4	24.7	18.8	21.6	22.7	24.0	25.4	19.9	23.0	24.2	25.6	27.1	21.2	24.5	25.8	27.3	29.0
	-5	16.2	18.4	19.3	20.4	21.5	18.4	21.1	22.1	23.3	24.7	18.8	21.6	22.7	23.9	25.3	19.9	23.0	24.2	25.5	27.0	21.2	24.5	25.8	27.2	28.9
	0	16.2	18.4	19.3	20.3	21.4	18.4	21.0	22.1	23.3	24.6	18.8	21.6	22.7	23.9	25.3	20.0	22.9	24.1	25.5	27.0	21.2	24.4	25.7	27.2	28.8
	5	16.2	18.4	19.3	20.3	21.4	18.4	21.0	22.1	23.3	24.6	18.8	21.5	22.6	23.9	25.2	20.0	22.9	24.1	25.4	26.9	21.2	24.4	25.7	27.1	28.8
	10	16.2	18.4	19.3	20.2	21.3	18.4	21.0	22.0	23.2	24.5	18.8	21.5	22.6	23.8	25.1	20.0	22.9	24.1	25.4	26.8	21.2	24.4	25.7	27.1	28.7
	15	15.9	18.1	18.9	19.9	20.9	18.1	20.7	21.7	22.8	24.1	18.5	21.2	22.2	23.4	24.7	19.7	22.5	23.7	24.9	26.4	20.9	24.0	25.3	26.6	28.2
	20	15.3	17.3	18.1	19.0	20.0	17.4	19.8	20.8	21.9	23.1	17.8	20.3	21.3	22.5	23.7	18.9	21.7	22.8	24.0	25.3	20.1	23.1	24.3	25.6	27.1
	25	14.5	16.5	17.2	18.1	19.0	16.6	18.9	19.8	20.8	21.9	17.0	19.4	20.3	21.4	22.5	18.1	20.7	21.7	22.8	24.1	19.3	22.1	23.2	24.4	25.8
	30	13.3	15.1	15.8	16.5	17.4	15.3	17.4	18.2	19.2	20.2	15.7	17.9	18.7	19.7	20.7	16.7	19.1	20.0	21.1	22.2	17.8	20.4	21.4	22.6	23.8
	35	12.1	13.7	14.3	15.0	15.8	14.0	15.9	16.7	17.5	18.4	14.4	16.4	17.1	18.0	18.9	15.4	17.5	18.4	19.3	20.3	16.4	18.7	19.7	20.7	21.8
	40	10.9	12.3	12.9	13.5	14.2	12.7	14.4	15.1	15.8	16.6	13.0	14.8	15.5	16.3	17.1	14.0	15.9	16.7	17.5	18.4	15.0	17.1	17.9	18.8	19.9
	45	9.7	10.9	11.4	12.0	12.5	11.4	12.9	13.5	14.1	14.9	11.7	13.3	13.9	14.6	15.3	12.6	14.3	15.0	15.7	16.6	13.5	15.4	16.2	17.0	17.9
	50	8.5	9.6	10.0	10.5	11.0	10.1	11.4	12.0	12.5	13.2	10.4	11.8	12.4	13.0	13.6	11.3	12.8	13.4	14.0	14.8	12.1	13.8	14.5	15.2	16.0
	52	7.9	8.9	9.3	9.8	10.2	9.5	10.7	11.2	11.8	12.4	9.8	11.1	11.6	12.2	12.8	10.6	12.0	12.6	13.2	13.9	11.5	13.0	13.7	14.4	15.1
2	-25	16.4	18.7	19.7	20.7	21.9	18.6	21.4	22.5	23.7	25.1	19.0	21.9	23.1	24.3	25.8	20.2	23.3	24.5	25.9	27.5	21.4	24.8	26.2	27.7	29.4
	-20	16.4	18.7	19.7	20.7	21.8	18.6	21.4	22.5	23.7	25.1	19.0	21.9	23.0	24.3	25.7	20.2	23.3	24.5	25.9	27.5	21.4	24.8	26.1	27.6	29.3
	-15	16.4	18.7	19.6	20.7	21.8	18.6	21.4	22.5	23.7	25.0	19.1	21.9	23.0	24.3	25.7	20.2	23.3	24.5	25.9	27.4	21.5	24.8	26.1	27.6	29.3
	-10	16.4	18.7	19.6	20.6	21.8	18.6	21.4	22.4	23.7	25.0	19.1	21.9	23.0	24.3	25.6	20.2	23.3	24.5	25.9	27.4	21.5	24.8	26.1	27.6	29.2
	-5	16.5	18.7	19.6	20.6	21.8	18.7	21.4	22.5	23.6	25.0	19.1	21.9	23.0	24.2	25.6	20.3	23.3	24.5	25.8	27.3	21.5	24.8	26.1	27.6	29.2
	0	16.5	18.7	19.6	20.6	21.7	18.7	21.4	22.5	23.6	25.0	19.2	21.9	23.0	24.2	25.6	20.3	23.3	24.5	25.8	27.3	21.6	24.8	26.1	27.6	29.2
	5	16.5	18.7	19.6	20.6	21.7	18.7	21.4	22.4	23.6	24.9	19.2	21.9	23.0	24.2	25.5	20.3	23.3	24.5	25.8	27.2	21.6	24.8	26.1	27.5	29.1
	10	16.5	18.7	19.6	20.6	21.6	18.7	21.3	22.4	23.5	24.8	19.2	21.9	22.9	24.1	25.5	20.3	23.2	24.4	25.7	27.2	21.6	24.8	26.0	27.4	29.0
	15	15.7	17.8	18.6	19.5	20.5	17.8	20.3	21.3	22.4	23.6	18.3	20.8	21.8	23.0	24.2	19.4	22.2	23.3	24.5	25.8	20.6	23.6	24.8	26.2	27.6
	20	14.6	16.6	17.4	18.2	19.1	16.7	19.0	19.9	21.0	22.1	17.1	19.5	20.5	21.5	22.7	18.2	20.8	21.8	23.0	24.2	19.4	22.2	23.3	24.6	25.9
	25	13.5	15.3	16.0	16.8	17.6	15.5	17.6	18.5	19.4	20.4	15.9	18.1	19.0	19.9	21.0	17.0	19.3	20.3	21.3	22.5	18.1	20.7	21.7	22.8	24.1
	30	12.4	14.0	14.6	15.3	16.0	14.3	16.2	16.9	17.8	18.7	14.6	16.6	17.4	18.3	19.2	15.6	17.8	18.7	19.6	20.6	16.7	19.1	20.0	21.0	22.2
	35	11.2	12.6	13.2	13.8	14.5	13.0	14.7	15.4	16.2	17.0	13.4	15.2	15.9	16.6	17.5	14.3	16.3	17.0	17.9						

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																									
		13500					13000					12500					11500					10500					
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30		
0	-25	22.1	25.7	27.2	28.9	30.8	23.5	27.5	29.1	31.0	33.1	25.1	29.4	31.2	33.3	35.6	28.7	33.9	36.2	38.7	41.6	33.1	39.6	42.4	45.6	49.3	
	-20	22.1	25.7	27.2	28.9	30.8	23.5	27.5	29.1	31.0	33.0	25.1	29.4	31.2	33.2	35.6	28.7	33.9	36.1	38.6	41.5	33.2	39.6	42.3	45.5	49.1	
	-15	22.1	25.7	27.2	28.9	30.7	23.6	27.5	29.1	30.9	33.0	25.1	29.4	31.2	33.2	35.5	28.8	34.0	36.1	38.6	41.4	33.2	39.6	42.3	45.4	49.0	
	-10	22.2	25.8	27.2	28.9	30.7	23.6	27.5	29.1	30.9	33.0	25.2	29.5	31.2	33.2	35.5	28.8	34.0	36.1	38.6	41.3	33.3	39.6	42.3	45.4	48.9	
	-5	22.2	25.7	27.2	28.8	30.6	23.6	27.5	29.1	30.9	32.9	25.2	29.4	31.2	33.1	35.4	28.9	34.0	36.1	38.5	41.2	33.3	39.6	42.3	45.3	48.8	
	0	22.2	25.7	27.1	28.7	30.5	23.6	27.5	29.0	30.8	32.8	25.2	29.4	31.1	33.0	35.2	28.8	33.9	36.0	38.4	41.1	33.3	39.6	42.2	45.2	48.6	
	5	22.2	25.7	27.1	28.6	30.4	23.6	27.4	29.0	30.7	32.7	25.2	29.3	31.0	33.0	35.1	28.8	33.9	35.9	38.3	41.0	33.3	39.5	42.1	45.1	48.5	
	10	22.2	25.6	27.0	28.6	30.4	23.6	27.4	28.9	30.6	32.6	25.2	29.3	31.0	32.9	35.0	28.9	33.8	35.9	38.2	40.9	33.4	39.5	42.0	45.0	48.3	
	15	22.2	25.6	27.0	28.5	30.3	23.6	27.4	28.9	30.6	32.5	25.2	29.3	31.0	32.8	34.9	28.9	33.8	35.8	38.1	40.7	33.4	39.4	42.0	44.9	48.2	
	20	21.8	25.2	26.5	28.0	29.7	23.3	26.9	28.4	30.1	31.9	24.9	28.8	30.5	32.3	34.3	28.5	33.3	35.3	37.5	40.0	32.9	38.8	41.3	44.1	47.3	
10	25	21.5	24.8	26.1	27.5	29.2	22.9	26.5	27.9	29.5	31.3	24.5	28.4	29.9	31.7	33.7	28.1	32.7	34.7	36.8	39.3	32.5	38.2	40.6	43.4	46.5	
	30	20.2	23.3	24.5	25.9	27.4	21.6	24.9	26.2	27.7	29.4	23.1	26.7	28.2	29.8	31.7	26.5	30.9	32.7	34.7	37.0	30.7	36.0	38.3	40.8	43.7	
	35	18.7	21.5	22.6	23.8	25.2	20.0	23.0	24.3	25.6	27.1	21.4	24.7	26.1	27.6	29.2	24.6	28.6	30.3	32.1	34.2	28.6	33.5	35.5	37.8	40.5	
	40	17.2	19.7	20.7	21.8	23.1	18.4	21.1	22.2	23.5	24.8	19.7	22.7	23.9	25.3	26.8	22.8	26.4	27.9	29.6	31.4	26.4	30.9	32.8	34.9	37.2	
	45	15.6	17.9	18.8	19.8	20.9	16.8	19.2	20.2	21.3	22.5	18.0	20.7	21.8	23.0	24.4	20.9	24.2	25.5	27.0	28.7	24.3	28.4	30.1	31.9	34.1	
	50	14.1	16.1	16.9	17.8	18.8	15.2	17.4	18.3	19.2	20.3	16.3	18.8	19.8	20.8	22.1	19.0	22.0	23.2	24.6	26.1	22.3	26.0	27.5	29.2	31.1	
	54	12.8	14.6	15.3	16.1	17.0	13.8	15.8	16.6	17.5	18.5	15.0	17.2	18.0	19.0	20.1	17.5	20.2	21.3	22.5	23.9	20.6	23.9	25.3	26.8	28.6	
	20	-25	22.4	26.1	27.6	29.3	31.2	23.9	27.8	29.5	31.3	33.4	25.4	29.8	31.6	33.6	35.9	29.1	34.4	36.6	39.1	41.9	33.6	40.1	42.8	46.0	49.6
		-20	22.4	26.1	27.5	29.2	31.1	23.9	27.8	29.5	31.3	33.4	25.5	29.8	31.6	33.6	35.9	29.1	34.3	36.5	39.0	41.8	33.6	40.1	42.8	45.9	49.5
		-15	22.5	26.1	27.5	29.2	31.0	23.9	27.8	29.5	31.3	33.3	25.5	29.8	31.6	33.6	35.8	29.2	34.3	36.5	39.0	41.7	33.7	40.1	42.8	45.8	49.4
-10		22.5	26.1	27.5	29.2	31.0	24.0	27.9	29.5	31.2	33.3	25.6	29.8	31.6	33.5	35.8	29.2	34.4	36.5	38.9	41.7	33.7	40.1	42.7	45.8	49.3	
-5		22.5	26.1	27.5	29.1	30.9	24.0	27.8	29.4	31.2	33.2	25.6	29.8	31.5	33.5	35.7	29.3	34.3	36.5	38.9	41.6	33.8	40.1	42.7	45.7	49.2	
0		22.5	26.1	27.5	29.1	30.9	24.0	27.8	29.4	31.1	33.1	25.6	29.8	31.5	33.4	35.6	29.3	34.3	36.4	38.8	41.5	33.8	40.1	42.7	45.6	49.1	
5		22.6	26.0	27.4	29.0	30.8	24.0	27.8	29.3	31.1	33.0	25.6	29.8	31.4	33.3	35.5	29.3	34.3	36.4	38.7	41.4	33.9	40.0	42.6	45.6	48.9	
10		22.6	26.0	27.4	29.0	30.7	24.0	27.8	29.3	31.0	32.9	25.6	29.7	31.4	33.3	35.4	29.3	34.3	36.3	38.6	41.2	33.9	40.0	42.5	45.4	48.8	
15		22.2	25.6	27.0	28.5	30.2	23.7	27.4	28.8	30.5	32.4	25.3	29.3	30.9	32.7	34.8	28.9	33.8	35.8	38.0	40.6	33.4	39.4	41.9	44.7	48.0	
20		21.4	24.7	26.0	27.4	29.0	22.9	26.4	27.8	29.4	31.1	24.4	28.2	29.8	31.5	33.5	28.0	32.6	34.5	36.6	39.0	32.3	38.0	40.4	43.1	46.1	
30	25	20.5	23.6	24.8	26.2	27.7	21.9	25.2	26.6	28.0	29.7	23.4	27.0	28.5	30.1	32.0	26.8	31.2	33.0	35.0	37.3	31.1	36.5	38.7	41.2	44.1	
	30	19.0	21.8	22.9	24.2	25.6	20.3	23.4	24.6	26.0	27.5	21.7	25.1	26.6	27.9	29.6	25.0	29.0	30.7	32.5	34.6	29.0	33.9	36.0	38.3	40.9	
	35	17.6	20.1	21.1	22.2	23.5	18.8	21.6	22.7	23.9	25.3	20.1	23.2	24.4	25.8	27.3	23.2	26.9	28.4	30.1	32.0	27.0	31.5	33.4	35.5	37.9	
	40	16.0	18.3	19.3	20.3	21.4	17.2	19.7	20.7	21.9	23.1	18.5	21.2	22.3	23.6	25.0	21.4	24.7	26.1	27.6	29.3	24.9	29.0	30.7	32.6	34.8	
	45	14.5	16.6	17.4	18.3	19.3	15.6	17.9	18.8	19.8	20.9	16.8	19.3	20.3	21.4	22.7	19.6	22.6	23.8	25.2	26.7	22.9	26.6	28.2	29.9	31.8	
	50	13.1	14.9	15.7	16.5	17.4	14.1	16.2	17.0	17.9	18.9	15.3	17.5	18.4	19.4	20.5	17.8	20.6	21.7	22.9	24.3	21.0	24.3	25.7	27.3	29.0	
	52	12.4	14.1	14.8	15.6	16.4	13.4	15.3	16.1	16.9	17.9	14.5	16.6	17.5	18.4	19.4	17.0	19.6	20.6	21.8	23.1	20.0	23.2	24.6	26.0	27.7	
	40	-25	22.8	26.4	27.9	29.6	31.5	24.2	28.2	29.8	31.7	33.8	25.8	30.2	32.0	34.0	36.3	29.5	34.8	37.0	39.4	42.3	34.1	40.5	43.3	46.4	50.0
		-20	22.8	26.4	27.9	29.5	31.4	24.3	28.2	29.8	31.6	33.7	25.8	30.2	31.9	33.9	36.2	29.6	34.7	36.9	39.4	42.2	34.1	40.5	43.2	46.3	49.9
		-15	22.8	26.4	27.9	29.5	31.4	24.3	28.2	29.8	31.6	33.6	25.9	30.2	31.9	33.9	36.1	29.6	34.8	36.9	39.3	42.1	34.2	40.5	43.2	46.2	49.8
-10		22.9	26.4	27.9	29.5	31.3	24.3	28.2	29.8	31.6	33.6	25.9	30.2	31.9	33.9	36.1	29.6	34.8	36.9	39.3	42.0	34.2	40.5	43.2	46.2	49.7	
-5		22.9	26.4	27.9	29.5	31.3	24.4	28.2	29.8	31.6	33.5	26.0	30.2	31.9	33.8	36.0	29.7	34.8	36.9	39.3	42.0	34.3	40.6	43.2	46.2	49.6	
0		22.9	26.5	27.9	29.5	31.2	24.4	28.2	29.8	31.5	33.5	26.0	30.2	31.9	33.8	36.0	29.8	34.8	36.9	39.2	41.9	34.4	40.6	43.2	46.2	49.6	
5		22.9	26.4	27.8	29.4	31.1	24.4	28.2	29.7	31.5	33.4	26.0	30.2	31.9	33.7	35.9	29.8	34.8	36.8	39.1	41.8	34.4	40.5	43.1	46.0	49.4	
10		22.9	26.4	27.8	29.3	31.1	24.4	28.2	29.7	31.4	33.3	26.0	30.1	31.8	33.7	35.8	29.8	34.7	36.8	39.0	41.6	34.4	40.5	43.0	45.9	49.2	
15		21.9	25.2	26.5	28.0	29.6	23.4	26.9	28.4	30.0	31.7	24.9	28.8	30.4	32.1	34.1	28.5	33.2	35.1	37.3	39.7	33.0	38.8	41.2	43.9	47.0	
20		20.7	23.7	24.9	26.3	27.8	22.0	25.4	26.7	28.2	29.8	23.5	27.2	28.6	30.3	32.1	27.0	31.4	33.2	35.2	37.4	31.2	36.6	38.9	41.4	44.2	
50	25	19.3	22.1	23.2	24.5	25.9	20.6	23.7	24.9	26.3	27.8	22.0	25.4														

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																									
		* 16300					15200					15000					14500					14000					
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	16.9	19.2	20.2	21.2	22.4	19.1	21.9	23.0	24.3	25.7	19.6	22.4	23.6	24.9	26.3	20.7	23.8	25.1	26.5	28.1	22.0	25.4	26.7	28.3	30.0	
	-25	16.9	19.2	20.1	21.2	22.3	19.1	21.9	23.0	24.2	25.6	19.5	22.4	23.5	24.8	26.2	20.7	23.8	25.0	26.4	28.0	22.0	25.3	26.7	28.2	29.9	
	-20	16.9	19.2	20.1	21.2	22.3	19.1	21.9	23.0	24.2	25.5	19.6	22.4	23.5	24.8	26.2	20.8	23.8	25.0	26.4	27.9	22.0	25.3	26.7	28.2	29.8	
	-15	16.9	19.2	20.1	21.1	22.3	19.2	21.9	23.0	24.2	25.5	19.6	22.4	23.5	24.8	26.2	20.8	23.8	25.0	26.4	27.9	22.1	25.4	26.7	28.1	29.8	
	-10	16.9	19.2	20.1	21.1	22.2	19.2	21.9	22.9	24.1	25.4	19.6	22.4	23.5	24.7	26.1	20.8	23.8	25.0	26.3	27.8	22.1	25.3	26.6	28.1	29.7	
	-5	16.9	19.2	20.1	21.1	22.2	19.2	21.8	22.9	24.1	25.4	19.6	22.4	23.5	24.7	26.0	20.8	23.8	25.0	26.3	27.7	22.1	25.3	26.6	28.0	29.6	
	0	16.5	18.7	19.5	20.5	21.5	18.7	21.3	22.3	23.4	24.7	19.1	21.8	22.8	24.0	25.3	20.3	23.2	24.3	25.6	27.0	21.5	24.6	25.9	27.3	28.8	
	5	15.9	18.0	18.8	19.7	20.7	18.1	20.5	21.5	22.6	23.8	18.5	21.1	22.1	23.2	24.4	19.6	22.4	23.5	24.7	26.0	20.9	23.9	25.0	26.4	27.8	
	10	15.0	16.9	17.7	18.5	19.5	17.1	19.4	20.3	21.3	22.4	17.5	19.9	20.8	21.9	23.0	18.6	21.2	22.2	23.3	24.6	19.8	22.6	23.7	24.9	26.3	
	15	13.8	15.6	16.3	17.1	17.9	15.9	18.0	18.8	19.7	20.7	16.3	18.4	19.3	20.3	21.3	17.3	19.7	20.6	21.7	22.8	18.4	21.0	22.0	23.2	24.4	
3500	20	12.7	14.3	14.9	15.6	16.4	14.6	16.6	17.3	18.2	19.1	15.0	17.0	17.8	18.7	19.6	16.0	18.2	19.0	20.0	21.0	17.1	19.5	20.4	21.4	22.6	
	25	11.6	13.0	13.6	14.2	14.9	13.4	15.2	15.9	16.6	17.4	13.8	15.6	16.3	17.1	18.0	14.7	16.7	17.5	18.4	19.3	15.8	17.9	18.8	19.7	20.8	
	30	10.5	11.8	12.3	12.8	13.4	12.2	13.8	14.4	15.1	15.8	12.6	14.2	14.8	15.6	16.3	13.5	15.3	16.0	16.7	17.6	14.5	16.4	17.2	18.0	19.0	
	35	9.4	10.6	11.0	11.5	12.0	11.1	12.5	13.0	13.7	14.3	11.4	12.9	13.4	14.1	14.8	12.3	13.9	14.5	15.2	16.0	13.2	15.0	15.7	16.4	17.3	
	40	8.3	9.3	9.7	10.2	10.6	9.9	11.2	11.7	12.2	12.8	10.2	11.5	12.1	12.6	13.2	11.1	12.5	13.1	13.7	14.4	12.0	13.5	14.2	14.8	15.6	
	45	7.3	8.1	8.5	8.9	9.3	8.8	9.9	10.3	10.8	11.3	9.1	10.2	10.7	11.2	11.7	9.9	11.1	11.6	12.2	12.8	10.7	12.1	12.7	13.3	13.9	
	46	6.9	7.8	8.1	8.5	8.8	8.4	9.5	9.9	10.3	10.8	8.7	9.8	10.3	10.7	11.2	9.5	10.7	11.2	11.7	12.3	10.3	11.7	12.2	12.8	13.4	
	3000	-35	17.2	19.7	20.6	21.7	22.8	19.5	22.4	23.5	24.8	26.2	20.0	22.9	24.1	25.4	26.8	21.2	24.3	25.6	27.0	28.6	22.5	25.9	27.3	28.8	30.5
		-30	17.2	19.6	20.6	21.6	22.7	19.5	22.3	23.4	24.7	26.1	20.0	22.9	24.0	25.3	26.7	21.2	24.3	25.5	26.9	28.5	22.4	25.8	27.2	28.7	30.4
		-25	17.2	19.5	20.5	21.5	22.6	19.5	22.2	23.4	24.6	25.9	19.9	22.8	23.9	25.2	26.6	21.1	24.2	25.4	26.8	28.3	22.4	25.8	27.1	28.6	30.3
-20		17.2	19.5	20.4	21.4	22.5	19.4	22.2	23.3	24.5	25.8	19.9	22.7	23.8	25.1	26.5	21.1	24.1	25.4	26.7	28.2	22.4	25.7	27.0	28.5	30.1	
-15		17.0	19.3	20.2	21.2	22.3	19.3	21.9	23.0	24.2	25.5	19.7	22.5	23.6	24.8	26.1	20.9	23.9	25.1	26.4	27.9	22.2	25.4	26.7	28.2	29.8	
-10		16.7	18.9	19.7	20.7	21.8	18.9	21.5	22.5	23.7	24.9	19.3	22.0	23.1	24.3	25.6	20.5	23.4	24.6	25.9	27.3	21.8	24.9	26.2	27.6	29.1	
-5		16.3	18.4	19.2	20.2	21.2	18.5	21.0	22.0	23.1	24.3	18.9	21.5	22.5	23.7	24.9	20.0	22.9	24.0	25.2	26.6	21.3	24.3	25.6	26.9	28.4	
0		15.6	17.6	18.4	19.3	20.3	17.8	20.2	21.1	22.2	23.3	18.2	20.7	21.6	22.7	23.9	19.3	22.0	23.1	24.2	25.5	20.5	23.4	24.6	25.9	27.3	
5		15.0	16.9	17.7	18.5	19.4	17.1	19.4	20.3	21.2	22.3	17.5	19.8	20.8	21.8	22.9	18.6	21.1	22.1	23.3	24.5	19.8	22.5	23.6	24.9	26.2	
10		13.9	15.7	16.4	17.1	17.9	15.9	18.0	18.8	19.7	20.7	16.3	18.5	19.3	20.3	21.3	17.4	19.7	20.6	21.7	22.8	18.5	21.1	22.1	23.2	24.4	
2500	15	12.8	14.4	15.0	15.7	16.5	14.7	16.7	17.4	18.3	19.2	15.1	17.1	17.9	18.8	19.7	16.1	18.3	19.1	20.1	21.1	17.2	19.6	20.5	21.5	22.7	
	20	11.7	13.2	13.8	14.4	15.1	13.6	15.3	16.0	16.8	17.6	13.9	15.8	16.5	17.3	18.1	14.9	16.9	17.7	18.5	19.5	16.0	18.1	19.0	19.9	20.9	
	25	10.7	12.0	12.5	13.0	13.6	12.4	14.0	14.6	15.3	16.1	12.8	14.4	15.1	15.8	16.6	13.7	15.5	16.2	17.0	17.8	14.7	16.7	17.4	18.3	19.2	
	30	9.6	10.8	11.2	11.7	12.3	11.3	12.7	13.3	13.9	14.6	11.6	13.1	13.7	14.3	15.0	12.5	14.1	14.8	15.5	16.2	13.5	15.2	15.9	16.7	17.5	
	35	8.6	9.6	10.0	10.4	10.9	10.2	11.5	12.0	12.5	13.1	10.5	11.8	12.3	12.9	13.5	11.3	12.8	13.4	14.0	14.7	12.2	13.8	14.5	15.2	15.9	
	40	7.5	8.4	8.8	9.2	9.6	9.1	10.2	10.6	11.1	11.6	9.4	10.5	11.0	11.5	12.0	10.2	11.5	12.0	12.5	13.1	11.0	12.4	13.0	13.6	14.3	
	44	6.6	7.4	7.7	8.0	8.4	8.1	9.0	9.4	9.9	10.3	8.3	9.4	9.8	10.2	10.7	9.1	10.2	10.7	11.2	11.7	9.9	11.2	11.7	12.2	12.8	
	2000	-35	17.6	20.0	21.0	22.0	23.2	19.9	22.8	23.9	25.2	26.6	20.4	23.3	24.5	25.8	27.2	21.6	24.8	26.0	27.5	29.0	22.9	26.3	27.7	29.3	31.0
		-30	17.6	20.0	20.9	22.0	23.1	19.9	22.7	23.8	25.1	26.4	20.4	23.3	24.4	25.7	27.1	21.6	24.7	26.0	27.3	28.9	22.9	26.3	27.6	29.1	30.8
		-25	17.5	19.8	20.8	21.8	22.9	19.8	22.6	23.7	24.9	26.2	20.2	23.1	24.2	25.5	26.9	21.5	24.5	25.8	27.1	28.6	22.8	26.1	27.4	28.9	30.6
-20		17.4	19.7	20.6	21.6	22.7	19.7	22.4	23.5	24.7	26.0	20.1	22.9	24.1	25.3	26.7	21.3	24.4	25.6	26.9	28.4	22.6	25.9	27.2	28.7	30.3	
-15		16.8	19.0	19.9	20.8	21.9	19.1	21.7	22.7	23.8	25.1	19.5	22.2	23.3	24.4	25.7	20.7	23.6	24.7	26.0	27.4	22.0	25.1	26.4	27.7	29.3	
-10		16.1	18.2	19.0	19.9	20.9	18.3	20.8	21.8	22.8	24.0	18.7	21.3	22.3	23.4	24.7	19.9	22.7	23.8	25.0	26.3	21.1	24.1	25.3	26.6	28.1	
-5		15.4	17.4	18.2	19.0	20.0	17.6	19.9	20.8	21.8	23.0	18.0	20.4	21.4	22.4	23.6	19.1	21.7	22.8	23.9	25.2	20.3	23.1	24.3	25.5	26.9	
0		14.7	16.6	17.3	18.1	19.0	16.8	19.0	19.9	20.8	21.9	17.2	19.5	20.4	21.4	22.5	18.3	20.8	21.7	22.8	24.0	19.4	22.1	23.2	24.4	25.7	
5		13.9	15.6	16.3	17.0	17.9	15.9	18.0	18.8	19.7	20.7	16.3	18.4	19.3	20.3	21.2	17.3	19.7	20.6	21.6	22.7	18.5	21.0	22.0	23.1	24.3	
10		12.8	14.4	15.1	15.8	16.5	14.8	16.7	17.4	18.3	19.2	15.2	17.1	17.9	18.8	19.7	16.2	18.3	19.2	20.1	21.1	17.3	19.6	20.5	21.5	22.7	
1500	15	11.8	13.3	13.8	14.5	15.1	13.7	15.4	16.1	16.9	17.7	14.0	15.9	16.6	17.3	18.2	15.0	17.0	17.8	18.6	19						

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		13500					13000					12500					11500					10500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
4000	-30	23.4	27.0	28.5	30.2	32.1	24.9	28.8	30.5	32.3	34.4	26.5	30.8	32.6	34.6	36.9	30.2	35.5	37.7	40.1	42.9	34.9	41.4	44.1	47.2	50.7
	-25	23.4	27.0	28.5	30.1	31.9	24.9	28.8	30.4	32.2	34.2	26.5	30.8	32.5	34.5	36.8	30.2	35.4	37.6	40.0	42.8	34.9	41.3	44.0	47.0	50.5
	-20	23.4	27.0	28.5	30.1	31.9	24.9	28.8	30.4	32.2	34.2	26.5	30.8	32.5	34.5	36.7	30.3	35.4	37.6	40.0	42.7	35.0	41.3	44.0	47.0	50.4
	-15	23.4	27.0	28.5	30.1	31.9	24.9	28.8	30.4	32.2	34.1	26.6	30.8	32.5	34.5	36.7	30.3	35.5	37.6	39.9	42.6	35.0	41.3	43.9	46.9	50.3
	-10	23.4	27.0	28.4	30.0	31.8	24.9	28.8	30.3	32.1	34.0	26.6	30.8	32.5	34.4	36.5	30.3	35.4	37.5	39.8	42.5	35.0	41.2	43.8	46.8	50.2
	-5	23.4	26.9	28.4	29.9	31.7	24.9	28.7	30.3	32.0	33.9	26.6	30.7	32.4	34.3	36.4	30.3	35.3	37.4	39.7	42.3	35.0	41.2	43.7	46.7	50.0
	0	22.9	26.3	27.6	29.1	30.8	24.4	28.0	29.5	31.2	33.0	26.0	30.0	31.6	33.4	35.4	29.6	34.5	36.5	38.7	41.2	34.2	40.2	42.7	45.5	48.7
	5	22.2	25.4	26.7	28.2	29.8	23.6	27.2	28.6	30.2	31.9	25.2	29.1	30.6	32.4	34.3	28.8	33.5	35.4	37.5	39.9	33.3	39.0	41.4	44.1	47.1
	10	21.1	24.1	25.3	26.7	28.2	22.5	25.8	27.1	28.6	30.2	24.0	27.6	29.1	30.7	32.5	27.5	31.8	33.6	35.6	37.8	31.8	37.1	39.3	41.8	44.7
	15	19.7	22.5	23.6	24.8	26.2	21.0	24.0	25.3	26.6	28.1	22.4	25.8	27.1	28.6	30.3	25.7	29.8	31.4	33.2	35.3	29.8	34.8	36.8	39.1	41.7
5000	-30	23.8	27.4	28.9	30.5	32.4	25.3	29.3	30.9	32.7	34.7	27.0	31.3	33.0	35.0	37.2	30.8	36.0	38.1	40.6	43.3	35.5	41.9	44.6	47.7	51.2
	-20	23.8	27.3	28.8	30.4	32.2	25.3	29.2	30.8	32.5	34.5	26.9	31.2	32.9	34.9	37.1	30.7	35.9	38.0	40.4	43.1	35.5	41.8	44.4	47.4	50.9
	-15	23.6	27.1	28.5	30.1	31.8	25.1	28.9	30.4	32.2	34.1	26.7	30.9	32.6	34.5	36.6	30.5	35.5	37.6	39.9	42.6	35.2	41.4	44.0	46.9	50.3
	-10	23.1	26.5	27.9	29.4	31.1	24.6	28.3	29.8	31.5	33.4	26.2	30.3	31.9	33.8	35.8	30.0	34.9	36.9	39.1	41.7	34.6	40.6	43.1	45.9	49.2
	-5	22.6	25.9	27.3	28.7	30.4	24.1	27.7	29.1	30.8	32.6	25.7	29.6	31.2	33.0	35.0	29.3	34.1	36.0	38.2	40.6	33.9	39.7	42.1	44.8	47.9
	0	21.8	25.0	26.3	27.7	29.2	23.3	26.7	28.1	29.6	31.3	24.8	28.6	30.1	31.8	33.6	28.4	32.9	34.7	36.8	39.1	32.8	38.3	40.6	43.2	46.2
	5	21.0	24.1	25.3	26.6	28.1	22.4	25.7	27.0	28.5	30.1	23.9	27.5	29.0	30.6	32.4	27.4	31.7	33.5	35.4	37.6	31.7	37.0	39.2	41.6	44.4
	10	19.7	22.5	23.6	24.8	26.2	21.0	24.1	25.3	26.6	28.1	22.5	25.8	27.1	28.6	30.3	25.8	29.8	31.4	33.2	35.3	29.9	34.8	36.8	39.1	41.6
	15	18.4	21.0	22.0	23.1	24.3	19.7	22.5	23.6	24.8	26.2	21.0	24.1	25.3	26.7	28.2	24.2	27.9	29.4	31.1	32.9	29.1	32.6	34.5	36.6	38.9
	20	17.1	19.4	20.4	21.4	22.5	18.3	20.9	21.9	23.0	24.3	19.6	22.4	23.5	24.8	26.2	22.6	26.0	27.4	28.9	30.6	26.3	30.5	32.2	34.1	36.3
6000	-30	24.3	28.1	29.6	31.2	33.1	25.9	29.9	31.6	33.4	35.5	27.6	32.0	33.8	35.8	38.1	31.5	36.8	39.0	41.5	44.3	36.3	42.9	45.6	48.8	52.4
	-20	24.3	28.0	29.5	31.1	33.0	25.8	29.8	31.5	33.3	35.3	27.5	31.9	33.7	35.7	37.9	31.4	36.7	38.9	41.3	44.1	36.2	42.7	45.5	48.5	52.1
	-15	24.2	27.8	29.3	30.9	32.7	25.7	29.7	31.3	33.0	35.0	27.4	31.7	33.4	35.4	37.6	31.3	36.5	38.6	41.0	43.7	36.1	42.5	45.1	48.2	51.6
	-10	24.1	27.6	29.1	30.6	32.4	25.6	29.5	31.0	32.8	34.7	27.3	31.5	33.2	35.1	37.3	31.1	36.2	38.3	40.7	43.4	35.9	42.2	44.8	47.8	51.2
	-5	23.3	26.7	28.1	29.6	31.3	24.8	28.5	30.0	31.7	33.6	26.5	30.5	32.2	34.0	36.1	30.2	35.1	37.1	39.4	41.9	34.9	40.9	43.4	46.2	49.5
	0	22.5	25.7	27.0	28.5	30.1	23.9	27.5	28.9	30.5	32.2	25.5	29.4	30.9	32.7	34.6	29.2	33.8	35.7	37.9	40.3	33.7	39.4	41.8	44.5	47.5
	5	21.6	24.7	25.9	27.3	28.8	23.0	26.4	27.7	29.2	30.9	24.6	28.2	29.7	31.4	33.2	28.1	32.5	34.3	36.3	38.6	32.4	37.9	40.1	42.7	45.5
	10	20.7	23.6	24.8	26.1	27.5	22.1	25.3	26.5	28.0	29.5	23.6	27.1	28.5	30.0	31.7	27.0	31.2	32.9	34.8	37.0	31.2	36.4	38.5	40.9	43.6
	15	19.7	22.4	23.5	24.7	26.1	21.0	24.0	25.2	26.5	28.0	22.4	25.7	27.0	28.5	30.1	25.7	29.7	31.3	33.1	35.1	29.8	34.6	36.6	38.9	41.4
	20	18.4	21.0	22.0	23.1	24.3	19.7	22.5	23.6	24.8	26.2	21.1	24.1	25.3	26.7	28.2	24.2	27.9	29.4	31.0	32.9	29.1	32.6	34.4	36.5	38.8
7000	-30	24.3	28.0	29.5	31.1	33.0	25.8	29.8	31.5	33.3	35.3	27.5	31.9	33.7	35.7	37.9	31.4	36.7	38.9	41.3	44.1	36.2	42.7	45.5	48.5	52.1
	-25	24.2	27.8	29.3	30.9	32.7	25.7	29.7	31.3	33.0	35.0	27.4	31.7	33.4	35.4	37.6	31.3	36.5	38.6	41.0	43.7	36.1	42.5	45.1	48.2	51.6
	-20	24.1	27.6	29.1	30.6	32.4	25.6	29.5	31.0	32.8	34.7	27.3	31.5	33.2	35.1	37.3	31.1	36.2	38.3	40.7	43.4	35.9	42.2	44.8	47.8	51.2
	-15	23.3	26.7	28.1	29.6	31.3	24.8	28.5	30.0	31.7	33.6	26.5	30.5	32.2	34.0	36.1	30.2	35.1	37.1	39.4	41.9	34.9	40.9	43.4	46.2	49.5
	-10	22.5	25.7	27.0	28.5	30.1	23.9	27.5	28.9	30.5	32.2	25.5	29.4	30.9	32.7	34.6	29.2	33.8	35.7	37.9	40.3	33.7	39.4	41.8	44.5	47.5
	-5	21.6	24.7	25.9	27.3	28.8	23.0	26.4	27.7	29.2	30.9	24.6	28.2	29.7	31.4	33.2	28.1	32.5	34.3	36.3	38.6	32.4	37.9	40.1	42.7	45.5
	0	20.7	23.6	24.8	26.1	27.5	22.1	25.3	26.5	28.0	29.5	23.6	27.1	28.5	30.0	31.7	27.0	31.2	32.9	34.8	37.0	31.2	36.4	38.5	40.9	43.6
	5	19.7	22.4	23.5	24.7	26.1	21.0	24.0	25.2	26.5	28.0	22.4	25.7	27.0	28.5	30.1	25.7	29.7	31.3	33.1	35.1	29.8	34.6	36.6	38.9	41.4
	10	18.4	21.0	22.0	23.1	24.3	19.7	22.5	23.6	24.8	26.2	21.1	24.1	25.3	26.7	28.2	24.2	27.9	29.4	31.0	32.9	29.1	32.6	34.4	36.5	38.8
	15	17.2	19.5	20.5	21.5	22.6	18.4	21.0	22.0	23.1	24.4	19.7	22.5	23.6	24.9	26.3	22.7	26.1	27.5	29.0	30.7	26.4	30.6	32.3	34.2	36.3
8000	-30	24.3	28.1	29.6	31.2	33.1	25.9	29.9	31.6	33.4	35.5	27.6	32.0	33.8	35.8	38.1	31.5	36.8	39.0	41.5	44.3	36.3	42.9	45.6	48.8	52.4
	-25	24.2	27.8	29.3	30.9	32.7	25.7	29.7	31.3	33.0	35.0	27.4	31.7	33.4	35.4	37.6	31.3	36.5	38.6	41.0	43.7	36.1	42.5	45.1	48.2	51.6
	-20	24.1	27.6	29.1	30.6	32.4	25.6	29.5	31.0	32.8	34.7	27.3	31.5	33.2	35.1	37.3	31.1	36.2	38.3	40.7	43.4	35.9	42.2	44.8	47.8	51.2
	-15	23.3	26.7	28.1	29.6	31.3	24.8	28.5	30.0	31.7	33.6	26.5	30.5	32.2	34.0	36.1	30.2	35.1	37.1	39.4	41.9	34.9	40.9	43.4	46.2	49.5
	-10	22.5	25.7	27.0	28.5	30.1	23.9	27.5	28.9	30.5	32.2	25.5	29.4	3												

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																								
		* 16300					15200					15000					14500					14000				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	
8000	-35	16.9	19.2	20.1	21.0	22.1	19.2	21.9	22.9	24.1	25.3	19.7	22.4	23.5	24.7	26.0	20.9	23.8	25.0	26.3	27.7	22.2	25.4	26.6	28.0	29.6
	-30	16.3	18.5	19.3	20.2	21.2	18.6	21.1	22.1	23.2	24.4	19.0	21.6	22.6	23.8	25.0	20.2	23.0	24.1	25.3	26.7	21.4	24.5	25.7	27.0	28.5
	-25	15.7	17.8	18.6	19.4	20.4	17.9	20.3	21.2	22.3	23.4	18.3	20.8	21.8	22.9	24.1	19.5	22.1	23.2	24.4	25.7	20.7	23.6	24.8	26.0	27.4
	-20	15.1	17.1	17.8	18.6	19.5	17.2	19.5	20.4	21.4	22.5	17.7	20.0	21.0	22.0	23.1	18.8	21.3	22.3	23.5	24.7	20.0	22.7	23.8	25.1	26.4
	-15	14.5	16.4	17.1	17.9	18.7	16.6	18.8	19.6	20.6	21.6	17.0	19.3	20.1	21.1	22.2	18.1	20.5	21.5	22.5	23.7	19.3	21.9	22.9	24.1	25.4
	-10	13.9	15.6	16.3	17.1	17.9	15.9	18.0	18.8	19.7	20.7	16.3	18.5	19.3	20.2	21.2	17.4	19.7	20.6	21.6	22.7	18.5	21.0	22.0	23.1	24.3
	-5	13.3	14.9	15.6	16.2	17.0	15.2	17.2	18.0	18.8	19.7	15.6	17.6	18.4	19.3	20.3	16.7	18.8	19.7	20.7	21.7	17.8	20.1	21.1	22.1	23.3
	0	12.6	14.1	14.7	15.4	16.1	14.5	16.4	17.1	17.9	18.7	14.9	16.8	17.5	18.4	19.3	15.9	18.0	18.8	19.7	20.6	17.0	19.2	20.1	21.1	22.2
	5	11.8	13.2	13.7	14.3	15.0	13.6	15.3	16.0	16.7	17.5	14.0	15.7	16.4	17.2	18.0	14.9	16.9	17.6	18.4	19.4	16.0	18.1	18.9	19.8	20.8
	10	10.9	12.2	12.7	13.3	13.9	12.7	14.3	14.9	15.6	16.3	13.1	14.7	15.3	16.0	16.8	14.0	15.8	16.5	17.2	18.1	15.0	16.9	17.7	18.5	19.5
7000	-35	15.0	11.2	11.6	12.1	12.7	11.7	13.1	13.7	14.3	15.0	12.0	13.5	14.1	14.7	15.4	12.9	14.6	15.2	15.9	16.6	13.9	15.7	16.4	17.1	18.0
	-30	9.0	10.1	10.5	10.9	11.4	10.7	12.0	12.5	13.0	13.6	11.0	12.3	12.9	13.4	14.1	11.9	13.3	13.9	14.5	15.2	12.8	14.4	15.0	15.7	16.5
	-25	8.1	9.0	9.4	9.8	10.2	9.6	10.8	11.2	11.7	12.3	9.9	11.2	11.6	12.1	12.7	10.8	12.1	12.6	13.2	13.8	11.6	13.1	13.7	14.3	15.0
	-20	7.1	7.9	8.2	8.6	8.9	8.6	9.6	10.0	10.5	10.9	8.9	10.0	10.4	10.8	11.3	9.7	10.9	11.3	11.8	12.4	10.5	11.8	12.3	12.9	13.5
	-15	6.1	6.8	7.1	7.4	7.7	7.6	8.5	8.8	9.2	9.6	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0	9.4	10.6	11.0	11.5	12.0
	-10	5.5	6.1	6.3	6.6	6.9	6.9	7.7	8.0	8.3	8.7	7.1	8.0	8.3	8.7	9.0	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0
	-5	5.5	6.1	6.3	6.6	6.9	6.9	7.7	8.0	8.3	8.7	7.1	8.0	8.3	8.7	9.0	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0
	0	5.5	6.1	6.3	6.6	6.9	6.9	7.7	8.0	8.3	8.7	7.1	8.0	8.3	8.7	9.0	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0
	5	5.5	6.1	6.3	6.6	6.9	6.9	7.7	8.0	8.3	8.7	7.1	8.0	8.3	8.7	9.0	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0
	10	5.5	6.1	6.3	6.6	6.9	6.9	7.7	8.0	8.3	8.7	7.1	8.0	8.3	8.7	9.0	7.9	8.8	9.2	9.6	10.0	8.6	9.7	10.1	10.5	11.0
6000	-35	15.8	17.8	18.6	19.5	20.4	18.0	20.4	21.3	22.4	23.5	18.4	20.9	21.9	22.9	24.1	19.5	22.2	23.3	24.5	25.8	20.8	23.7	24.8	26.1	27.5
	-30	15.2	17.1	17.9	18.7	19.6	17.3	19.6	20.5	21.5	22.6	17.7	20.1	21.1	22.1	23.2	18.9	21.4	22.4	23.6	24.8	20.1	22.8	24.0	25.2	26.5
	-25	14.6	16.5	17.2	18.0	18.8	16.7	18.9	19.7	20.7	21.7	17.1	19.4	20.3	21.2	22.3	18.2	20.6	21.6	22.7	23.8	19.4	22.0	23.1	24.2	25.5
	-20	14.0	15.8	16.5	17.2	18.0	16.1	18.2	19.0	19.9	20.9	16.5	18.6	19.5	20.4	21.4	17.5	19.9	20.8	21.8	22.9	18.7	21.2	22.2	23.3	24.5
	-15	13.5	15.1	15.8	16.5	17.3	15.5	17.4	18.2	19.1	20.0	15.8	17.9	18.7	19.6	20.5	16.9	19.1	20.0	20.9	22.0	18.0	20.4	21.4	22.4	23.6
	-10	12.9	14.4	15.0	15.7	16.4	14.8	16.7	17.4	18.2	19.1	15.2	17.1	17.9	18.7	19.6	16.2	18.3	19.1	20.0	21.0	17.3	19.6	20.5	21.5	22.6
	-5	12.3	13.7	14.3	14.9	15.6	14.1	15.9	16.6	17.4	18.2	14.5	16.3	17.1	17.8	18.7	15.5	17.5	18.3	19.1	20.1	16.6	18.7	19.6	20.5	21.5
	0	11.6	12.9	13.5	14.1	14.7	13.4	15.1	15.7	16.4	17.2	13.8	15.5	16.2	16.9	17.7	14.7	16.6	17.3	18.1	19.0	15.7	17.8	18.6	19.5	20.4
	5	10.8	12.1	12.6	13.1	13.7	12.6	14.1	14.7	15.4	16.1	12.9	14.6	15.2	15.9	16.6	13.9	15.6	16.3	17.1	17.9	14.9	16.8	17.5	18.3	19.2
	10	10.1	11.2	11.6	12.1	12.7	11.7	13.2	13.7	14.3	15.0	12.1	13.5	14.1	14.8	15.4	13.0	14.6	15.2	15.9	16.7	13.9	15.7	16.4	17.1	18.0
5000	-35	9.1	10.1	10.6	11.0	11.5	10.7	12.0	12.5	13.1	13.7	11.1	12.4	12.9	13.5	14.1	11.9	13.4	14.0	14.6	15.3	12.8	14.5	15.1	15.8	16.5
	-30	8.2	9.1	9.5	9.9	10.3	9.7	10.9	11.4	11.8	12.4	10.1	11.3	11.7	12.2	12.8	10.9	12.2	12.7	13.3	13.9	11.8	13.2	13.8	14.4	15.1
	-25	7.2	8.0	8.4	8.7	9.1	8.7	9.8	10.2	10.6	11.1	9.0	10.1	10.5	11.0	11.5	9.8	11.0	11.5	12.0	12.5	10.7	12.0	12.5	13.0	13.7
	-20	6.3	7.0	7.3	7.6	7.9	7.7	8.6	9.0	9.4	9.8	8.0	9.0	9.3	9.7	10.1	8.8	9.8	10.2	10.7	11.1	9.6	10.7	11.2	11.7	12.2
	-15	5.4	6.0	6.2	6.5	6.7	6.8	7.6	7.9	8.2	8.5	7.0	7.9	8.2	8.5	8.9	7.8	8.7	9.0	9.4	9.8	8.5	9.6	10.0	10.4	10.9
	-10	5.1	5.7	5.9	6.1	6.4	6.5	7.2	7.5	7.8	8.1	6.7	7.5	7.8	8.1	8.5	7.4	8.3	8.7	9.0	9.4	8.2	9.2	9.6	10.0	10.4
	-5	5.1	5.7	5.9	6.1	6.4	6.5	7.2	7.5	7.8	8.1	6.7	7.5	7.8	8.1	8.5	7.4	8.3	8.7	9.0	9.4	8.2	9.2	9.6	10.0	10.4
	0	5.1	5.7	5.9	6.1	6.4	6.5	7.2	7.5	7.8	8.1	6.7	7.5	7.8	8.1	8.5	7.4	8.3	8.7	9.0	9.4	8.2	9.2	9.6	10.0	10.4
	5	5.1	5.7	5.9	6.1	6.4	6.5	7.2	7.5	7.8	8.1	6.7	7.5	7.8	8.1	8.5	7.4	8.3	8.7	9.0	9.4	8.2	9.2	9.6	10.0	10.4
	10	5.1	5.7	5.9	6.1	6.4	6.5	7.2	7.5	7.8	8.1	6.7	7.5	7.8	8.1	8.5	7.4	8.3	8.7	9.0	9.4	8.2	9.2	9.6	10.0	10.4
4000	-35	14.6	16.5	17.2	18.0	18.8	16.7	18.9	19.8	20.7	21.8	17.1	19.4	20.3	21.3	22.3	18.2	20.7	21.6	22.7	23.9	19.4	22.1	23.1	24.3	25.6
	-30	14.1	15.8	16.5	17.3	18.1	16.1	18.2	19.0	19.9	20.9	16.5	18.7	19.5	20.4	21.5	17.6	19.9	20.8	21.9	23.0	18.7	21.3	22.3	23.4	24.6
	-25	13.5	15.2	15.8	16.6	17.3	15.5	17.5	18.3	19.1	20.1	15.9	18.0	18.8	19.7	20.6	16.9	19.2	20.1	21.0	22.1	18.1	20.5	21.5	22.5	23.7
	-20	13.0	14.6	15.2	15.9	16.6	14.9	16.8	17.6	18.4	19.3	15.3	17.3	18.0	18.9	19.8	16.3	18.5	19.3	20.2	21.2	17.4	19.7	20.6	21.6	22.7
	-15	12.4	13.9	14.5	15.2	15.8	14.3	16.1	16.8	17.6	18.4	14.7	16.6	17.3	18.1	19.0	15.7	17.7	18.5	19.4	20.3	16.8	19.0	19.8	20.8	21.8
	-10	11.8	13.3	13.8	14.4	15.1	13.7	15.4	16.1	16.8	17.6	14.1	15.8	16.5	17.3	18.1	15.0	16.9	17.7	18.5	19.4	16.1	18.2	19.0	19.9	20.9
	-5	11.3	12.6	13.1	13.7	14.3	13.1	14.7	15.3	16.0	16.7	13.4	15.1	15.7	16.4	17.2	14.4	16.2	16.9	17.7	18.5	15.4	17.3	18.1	19.0	19.9
	0	10.6	11.8	12.3	12.9	13.4	12.4	13.9	14.5	15.1	15.8	12.7	14.3	14.9	15.5	16.3	13.6	15.3	16.0	16.7	17.5	14.6	16.5	17.2	18.0	18.9
	5	10.0	11.1	11.6	12.0	12.6	11.7	13.1	13.6	14.2	14.9	12.0	13.5	14.0												

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
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ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		13500					13000					12500					11500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
8	-35	23.6	27.0	28.4	30.0	31.7	25.1	28.8	30.4	32.1	33.9	26.7	30.8	32.5	34.4	36.5	30.6	35.5	37.6	39.8	42.4
0	-30	22.8	26.1	27.4	28.9	30.5	24.3	27.9	29.3	30.9	32.7	25.9	29.8	31.4	33.2	35.2	29.6	34.3	36.3	38.4	40.9
0	-25	22.0	25.2	26.4	27.8	29.4	23.5	26.9	28.3	29.8	31.5	25.0	28.8	30.3	32.0	33.9	28.6	33.2	35.0	37.1	39.4
0	-20	21.3	24.3	25.5	26.8	28.3	22.7	25.9	27.3	28.7	30.3	24.2	27.8	29.2	30.8	32.6	27.7	32.0	33.8	35.7	37.9
0	-15	20.5	23.4	24.5	25.8	27.2	21.9	25.0	26.3	27.6	29.2	23.4	26.8	28.1	29.7	31.4	26.8	30.9	32.6	34.4	36.5
0	-10	19.7	22.5	23.6	24.8	26.1	21.1	24.1	25.2	26.6	28.0	22.5	25.8	27.1	28.5	30.1	25.8	29.8	31.3	33.1	35.1
0	-5	19.0	21.5	22.6	23.7	25.0	20.2	23.1	24.2	25.4	26.8	21.7	24.7	26.0	27.3	28.9	24.9	28.6	30.1	31.8	33.7
0	0	18.1	20.6	21.5	22.6	23.8	19.4	22.1	23.1	24.3	25.6	20.7	23.7	24.8	26.1	27.6	23.9	27.4	28.8	30.4	32.2
0	5	17.1	19.4	20.3	21.3	22.4	18.3	20.8	21.8	22.9	24.1	19.6	22.4	23.4	24.7	26.0	22.6	25.9	27.3	28.7	30.4
0	10	16.1	18.2	19.0	20.0	21.0	17.2	19.6	20.5	21.5	22.6	18.5	21.1	22.1	23.2	24.4	21.4	24.5	25.7	27.1	28.6
0	15	14.9	16.9	17.6	18.5	19.4	16.0	18.2	19.0	20.0	21.0	17.2	19.6	20.5	21.6	22.7	20.0	22.9	24.0	25.3	26.7
0	20	13.8	15.5	16.2	17.0	17.9	14.8	16.8	17.6	18.4	19.3	16.0	18.2	19.0	19.9	21.0	18.6	21.3	22.3	23.5	24.8
0	25	12.6	14.2	14.8	15.5	16.3	13.6	15.4	16.1	16.9	17.7	14.7	16.7	17.5	18.3	19.3	17.2	19.6	20.6	21.7	22.8
0	30	11.4	12.9	13.4	14.1	14.7	12.4	14.0	14.6	15.3	16.1	13.4	15.2	15.9	16.7	17.5	15.8	18.0	18.9	19.8	20.9
0	35	10.3	11.6	12.1	12.6	13.2	11.2	12.6	13.2	13.8	14.5	12.2	13.8	14.4	15.1	15.9	14.5	16.4	17.2	18.1	19.0
0	38	9.5	10.6	11.1	11.6	12.1	10.3	11.7	12.2	12.7	13.4	11.3	12.8	13.4	14.0	14.7	13.5	15.3	16.1	16.9	17.7
9	-35	22.1	25.3	26.5	27.9	29.5	23.5	27.0	28.4	29.9	31.6	25.1	28.9	30.4	32.1	34.0	28.7	33.3	35.2	37.2	39.6
0	-30	21.4	24.4	25.6	26.9	28.4	22.8	26.1	27.4	28.9	30.5	24.3	27.9	29.4	31.0	32.8	27.8	32.2	34.0	35.9	38.1
0	-25	20.6	23.5	24.7	25.9	27.3	22.0	25.1	26.4	27.8	29.3	23.5	26.9	28.3	29.9	31.6	26.9	31.1	32.8	34.6	36.7
0	-20	19.9	22.7	23.8	25.0	26.3	21.2	24.3	25.5	26.8	28.2	22.7	26.0	27.3	28.8	30.4	26.0	30.0	31.6	33.4	35.4
0	-15	19.2	21.8	22.9	24.0	25.3	20.5	23.4	24.5	25.8	27.2	21.9	25.1	26.3	27.7	29.2	25.2	29.0	30.5	32.2	34.1
0	-10	18.5	20.9	21.9	23.0	24.2	19.7	22.4	23.5	24.7	26.0	21.1	24.1	25.3	26.6	28.0	24.3	27.9	29.3	30.9	32.7
0	-5	17.7	20.1	21.0	22.0	23.2	18.9	21.5	22.5	23.7	24.9	20.3	23.1	24.2	25.5	26.9	23.3	26.8	28.1	29.7	31.4
0	0	16.9	19.1	20.0	20.9	22.0	18.0	20.5	21.5	22.5	23.7	19.3	22.0	23.1	24.3	25.5	22.3	25.6	26.9	28.3	29.9
0	5	15.9	18.0	18.8	19.7	20.7	17.1	19.4	20.3	21.3	22.4	18.4	20.9	21.9	22.9	24.2	21.2	24.3	25.5	26.8	28.3
0	10	15.0	16.9	17.7	18.5	19.4	16.1	18.2	19.0	20.0	21.0	17.3	19.6	20.5	21.6	22.7	20.0	22.9	24.0	25.3	26.7
0	15	13.8	15.6	16.3	17.1	17.9	14.9	16.9	17.6	18.5	19.4	16.1	18.2	19.1	20.0	21.0	18.7	21.3	22.4	23.5	24.8
0	20	12.7	14.3	15.0	15.6	16.4	13.7	15.5	16.2	17.0	17.8	14.9	16.8	17.6	18.4	19.4	17.4	19.8	20.7	21.8	23.0
0	25	11.6	13.0	13.6	14.2	14.9	12.6	14.2	14.8	15.5	16.2	13.6	15.4	16.1	16.9	17.7	16.0	18.2	19.1	20.0	21.1
0	30	10.4	11.7	12.2	12.8	13.4	11.4	12.8	13.4	14.0	14.7	12.4	14.0	14.6	15.3	16.1	14.7	16.7	17.4	18.3	19.3
0	35	9.4	10.5	10.9	11.4	12.0	10.2	11.5	12.0	12.6	13.2	11.2	12.6	13.2	13.8	14.5	13.4	15.2	15.9	16.7	17.5
0	36	9.0	10.1	10.5	11.0	11.5	9.9	11.1	11.6	12.1	12.7	10.8	12.2	12.7	13.3	14.0	13.0	14.7	15.4	16.1	17.0
1	-35	20.7	23.6	24.7	26.0	27.4	22.0	25.2	26.5	27.9	29.4	23.5	27.0	28.4	29.9	31.6	27.0	31.2	32.8	34.7	36.9
0	-30	20.0	22.7	23.8	25.0	26.4	21.3	24.3	25.5	26.9	28.3	22.8	26.1	27.4	28.9	30.5	26.1	30.1	31.7	33.5	35.5
0	-25	19.3	21.9	23.0	24.1	25.4	20.6	23.5	24.6	25.9	27.3	22.0	25.2	26.4	27.8	29.4	25.3	29.1	30.6	32.3	34.2
0	-20	18.6	21.1	22.1	23.2	24.4	19.9	22.6	23.7	24.9	26.3	21.3	24.3	25.5	26.8	28.3	24.4	28.1	29.5	31.2	33.0
0	-15	17.9	20.3	21.3	22.3	23.4	19.2	21.8	22.8	24.0	25.2	20.5	23.4	24.5	25.8	27.2	23.6	27.1	28.5	30.0	31.7
0	-10	17.2	19.5	20.4	21.3	22.4	18.4	20.9	21.9	23.0	24.1	19.7	22.4	23.5	24.7	26.0	22.7	26.0	27.3	28.8	30.4
0	-5	16.5	18.6	19.5	20.4	21.4	17.6	20.0	20.9	22.0	23.1	18.9	21.5	22.5	23.7	24.9	21.9	25.0	26.2	27.6	29.2
0	0	15.7	17.7	18.5	19.4	20.3	16.8	19.0	19.9	20.9	21.9	18.1	20.5	21.5	22.5	23.7	20.9	23.9	25.0	26.3	27.8
0	5	14.9	16.8	17.5	18.3	19.2	16.0	18.1	18.9	19.8	20.8	17.2	19.5	20.4	21.4	22.5	19.9	22.7	23.8	25.1	26.4
0	10	13.9	15.6	16.3	17.1	17.9	14.9	16.9	17.6	18.5	19.4	16.1	18.2	19.1	20.0	21.0	18.7	21.3	22.4	23.5	24.8
0	15	12.8	14.4	15.0	15.7	16.5	13.8	15.6	16.3	17.0	17.9	14.9	16.9	17.6	18.5	19.4	17.5	19.9	20.8	21.8	23.0
0	20	11.7	13.1	13.7	14.3	15.0	12.7	14.3	14.9	15.6	16.4	13.7	15.5	16.2	17.0	17.8	16.2	18.4	19.2	20.2	21.2
0	25	10.6	11.9	12.4	12.9	13.5	11.5	13.0	13.5	14.2	14.8	12.5	14.1	14.8	15.5	16.2	14.9	16.8	17.6	18.5	19.4
0	30	9.5	10.7	11.1	11.6	12.1	10.4	11.7	12.2	12.7	13.3	11.4	12.8	13.4	14.0	14.7	13.6	15.4	16.1	16.9	17.7
0	34	8.6	9.6	10.0	10.4	10.9	9.4	10.6	11.0	11.5	12.0	10.3	11.6	12.1	12.7	13.3	12.5	14.1	14.7	15.4	16.2
1	-35	19.3	22.0	23.0	24.2	25.4	20.6	23.5	24.7	25.9	27.3	22.1	25.2	26.5	27.9	29.4	25.3	29.2	30.7	32.4	34.3
1	-30	18.7	21.2	22.2	23.3	24.5	19.9	22.7	23.8	25.0	26.3	21.3	24.4	25.6	26.9	28.4	24.5	28.2	29.7	31.3	33.1
0	-25	18.0	20.4	21.4	22.4	23.6	19.2	21.9	22.9	24.1	25.3	20.6	23.5	24.6	25.9	27.3	23.7	27.2	28.6	30.2	31.9
0	-20	17.3	19.6	20.5	21.5	22.6	18.6	21.1	22.1	23.1	24.4	19.9	22.6	23.7	24.9	26.3	22.9	26.2	27.6	29.1	30.7
0	-15	16.7	18.8	19.7	20.6	21.7	17.9	20.2	21.2	22.2	23.4	19.1	21.8	22.8	23.9	25.2	22.1	25.3	26.5	27.9	29.5
0	-10	16.0	18.1	18.9	19.8	20.7	17.1	19.4	20.3	21.3	22.4	18.4	20.9	21.9	23.0	24.2	21.3	24.3	25.5	26.8	28.3
0	-5	15.3	17.2	18.0	18.9	19.8	16.4	18.6	19.4	20.3	21.4	17.6	20.0	20.9	22.0	23.1	20.4	23.3	24.4	25.7	27.1
0	0	14.6	16.4	17.1	17.9	18.8	15.7	17.7	18.5	19.3	20.3	16.8	19.1	20.0	20.9	22.0	19.6	22.3	23.3	24.5	25.9
0	5	13.8	15.5	16.2	16.9	17.7	14.9	16.8	17.5	18.3	19.2	16.0	18.1	18.9	19.8	20.8	18.6	21.2	22.2	23.3	24.6
0	10	12.8	14.4	15.0	15.7	16.4	13.8	15.6	16.2	17.0	17.8	14.9	16.8	17.6	18.4	19.3	17.4	19.8	20.7	21.8	22.9

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREFSPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		* 16300					15200					15000					14500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	12.5	14.0	14.6	15.2	15.9	14.4	16.2	16.9	17.7	18.5	14.8	16.6	17.4	18.2	19.0	15.8	17.8	18.6	19.5	20.4
2	-30	12.0	13.4	14.0	14.6	15.2	13.8	15.6	16.2	17.0	17.8	14.2	16.0	16.7	17.4	18.3	15.2	17.1	17.9	18.7	19.6
0	-25	11.5	12.8	13.3	13.9	14.5	13.3	14.9	15.6	16.2	17.0	13.6	15.3	16.0	16.7	17.5	14.6	16.4	17.2	17.9	18.8
0	-20	10.9	12.2	12.7	13.3	13.8	12.7	14.3	14.9	15.5	16.3	13.1	14.7	15.3	16.0	16.7	14.0	15.8	16.4	17.2	18.0
0	-15	10.4	11.6	12.1	12.6	13.2	12.2	13.6	14.2	14.8	15.5	12.5	14.0	14.6	15.3	16.0	13.4	15.1	15.7	16.4	17.2
0	-10	9.9	11.0	11.5	11.9	12.5	11.6	13.0	13.5	14.1	14.7	11.9	13.4	13.9	14.5	15.2	12.8	14.4	15.0	15.7	16.4
	-5	9.4	10.4	10.8	11.3	11.8	11.0	12.3	12.8	13.4	14.0	11.4	12.7	13.2	13.8	14.4	12.2	13.7	14.3	14.9	15.6
	0	8.8	9.8	10.2	10.6	11.1	10.4	11.7	12.1	12.7	13.2	10.8	12.0	12.5	13.1	13.6	11.6	13.0	13.5	14.1	14.8
	5	8.1	9.1	9.4	9.8	10.2	9.7	10.9	11.3	11.8	12.3	10.0	11.2	11.7	12.2	12.7	10.9	12.1	12.6	13.2	13.8
	10	7.4	8.2	8.5	8.8	9.2	8.9	9.9	10.3	10.7	11.2	9.2	10.3	10.7	11.1	11.6	10.0	11.2	11.6	12.1	12.6
	15	6.6	7.3	7.6	7.9	8.2	8.0	9.0	9.3	9.7	10.1	8.3	9.3	9.6	10.0	10.5	9.1	10.1	10.6	11.0	11.5
	20	5.7	6.4	6.6	6.8	7.1	7.1	7.9	8.3	8.6	8.9	7.4	8.3	8.6	8.9	9.3	8.2	9.1	9.4	9.8	10.3
	25	4.9	5.4	5.6	5.8	6.1	6.3	6.9	7.2	7.5	7.8	6.5	7.2	7.5	7.8	8.2	7.2	8.0	8.4	8.7	9.1
	30	4.1	4.6	4.7	4.9	5.1	5.4	6.0	6.2	6.5	6.7	5.7	6.3	6.5	6.8	7.1	6.3	7.0	7.3	7.6	7.9
1	-35	11.5	12.8	13.3	13.9	14.5	13.3	14.9	15.6	16.2	17.0	13.6	15.3	16.0	16.7	17.5	14.6	16.4	17.2	17.9	18.8
3	-30	11.0	12.3	12.8	13.3	13.9	12.8	14.3	14.9	15.6	16.3	13.1	14.7	15.3	16.0	16.8	14.0	15.8	16.5	17.2	18.0
0	-25	10.5	11.7	12.2	12.7	13.2	12.2	13.7	14.3	14.9	15.6	12.6	14.1	14.7	15.3	16.0	13.5	15.2	15.8	16.5	17.3
0	-20	10.0	11.1	11.6	12.1	12.6	11.7	13.1	13.6	14.2	14.9	12.0	13.5	14.0	14.7	15.3	12.9	14.5	15.1	15.8	16.5
0	-15	9.5	10.6	11.0	11.4	11.9	11.2	12.5	13.0	13.5	14.1	11.5	12.9	13.4	14.0	14.6	12.4	13.9	14.4	15.1	15.8
0	-10	9.0	10.0	10.4	10.8	11.3	10.6	11.9	12.4	12.9	13.4	11.0	12.2	12.7	13.3	13.9	11.8	13.2	13.8	14.4	15.0
	-5	8.5	9.4	9.8	10.2	10.6	10.1	11.2	11.7	12.2	12.7	10.4	11.6	12.1	12.6	13.1	11.2	12.6	13.1	13.6	14.2
	0	7.9	8.8	9.2	9.5	9.9	9.5	10.6	11.0	11.5	12.0	9.8	11.0	11.4	11.9	12.4	10.6	11.9	12.4	12.9	13.5
	5	7.3	8.0	8.3	8.7	9.0	8.8	9.8	10.1	10.6	11.0	9.1	10.1	10.5	10.9	11.4	9.9	11.0	11.4	11.9	12.4
	10	6.5	7.3	7.5	7.8	8.1	8.0	8.9	9.3	9.6	10.0	8.3	9.2	9.6	10.0	10.4	9.1	10.1	10.5	10.9	11.4
	15	5.8	6.4	6.6	6.9	7.2	7.2	8.0	8.3	8.6	9.0	7.5	8.3	8.6	9.0	9.3	8.2	9.1	9.5	9.9	10.3
	20	5.0	5.5	5.7	5.9	6.2	6.3	7.0	7.3	7.6	7.9	6.6	7.3	7.6	7.9	8.2	7.3	8.1	8.4	8.8	9.1
	25	4.2	4.6	4.8	5.0	5.2	5.5	6.1	6.3	6.6	6.8	5.7	6.4	6.6	6.9	7.1	6.4	7.1	7.4	7.7	8.0
	28	3.6	4.0	4.1	4.3	4.5	4.9	5.4	5.6	5.8	6.0	5.1	5.7	5.9	6.1	6.4	5.8	6.4	6.6	6.9	7.2
1	-35	10.5	11.7	12.1	12.7	13.2	12.2	13.7	14.3	14.9	15.6	12.6	14.1	14.7	15.3	16.0	13.5	15.1	15.8	16.5	17.3
4	-30	10.0	11.1	11.6	12.1	12.6	11.7	13.1	13.6	14.2	14.9	12.0	13.5	14.1	14.7	15.3	12.9	14.5	15.1	15.8	16.5
0	-25	9.5	10.6	11.0	11.5	12.0	11.2	12.5	13.0	13.6	14.2	11.5	12.9	13.4	14.0	14.6	12.4	13.9	14.5	15.1	15.8
0	-20	9.1	10.1	10.5	10.9	11.3	10.7	11.9	12.4	12.9	13.5	11.0	12.3	12.8	13.4	14.0	11.9	13.3	13.8	14.4	15.1
0	-15	8.6	9.5	9.9	10.3	10.7	10.2	11.4	11.8	12.3	12.9	10.5	11.7	12.2	12.7	13.3	11.4	12.7	13.2	13.8	14.4
0	-10	8.1	9.0	9.3	9.7	10.1	9.7	10.8	11.2	11.7	12.2	10.0	11.1	11.6	12.1	12.6	10.8	12.1	12.6	13.1	13.7
	-5	7.6	8.4	8.7	9.1	9.5	9.1	10.2	10.6	11.0	11.5	9.4	10.5	10.9	11.4	11.9	10.2	11.4	11.9	12.4	12.9
	0	7.1	7.8	8.1	8.4	8.8	8.6	9.5	9.9	10.3	10.7	8.9	9.9	10.2	10.7	11.1	9.6	10.7	11.2	11.6	12.1
	5	6.4	7.1	7.4	7.7	8.0	7.9	8.7	9.1	9.4	9.8	8.2	9.1	9.4	9.8	10.2	8.9	9.9	10.3	10.7	11.2
	10	5.8	6.4	6.6	6.9	7.1	7.2	8.0	8.3	8.6	9.0	7.5	8.3	8.6	8.9	9.3	8.2	9.1	9.5	9.9	10.3
	15	5.0	5.5	5.7	6.0	6.2	6.4	7.1	7.3	7.6	7.9	6.6	7.4	7.6	7.9	8.3	7.3	8.2	8.5	8.8	9.2
	20	4.2	4.7	4.9	5.0	5.2	5.5	6.1	6.4	6.6	6.9	5.8	6.4	6.7	6.9	7.2	6.5	7.2	7.5	7.8	8.1
	25	3.5	3.8	4.0	4.1	4.3	4.7	5.2	5.4	5.6	5.8	5.0	5.5	5.7	5.9	6.2	5.6	6.2	6.5	6.7	7.0
	26	3.2	3.5	3.7	3.8	4.0	4.4	4.9	5.1	5.3	5.5	4.7	5.2	5.4	5.6	5.8	5.3	5.9	6.1	6.3	6.6

** FOR ANTI-ICE SYSTEMS ON, SUBTRACT 7 FROM ABOVE CLIMB GRADIENTS.

* FOR USE IN AN EMERGENCY WHICH REQUIRES A LANDING AT A WEIGHT IN EXCESS OF MAXIMUM DESIGN
LANDING WEIGHT OF 15,200 POUNDS.

Figure 4-39 (Sheet 7 of 8)

LANDING GROSS CLIMB GRADIENT - PERCENT

FLAPS - FULL

CONDITIONS: ANTI-ICE SYSTEMS - OFF **
LANDING GEAR - DOWN
AIRSPEED - VREF

SPEEDBRAKES - RETRACT
ENGINES - TAKEOFF THRUST

ALT FT	TEMP DEG C	WEIGHT - POUNDS																			
		13500					13000					12500					11500				
		WIND KNOTS					WIND KNOTS					WIND KNOTS					WIND KNOTS				
		-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30	-10	0	10	20	30
1	-35	18.0	20.4	21.4	22.4	23.6	19.3	21.9	22.9	24.1	25.4	20.6	23.5	24.7	25.9	27.3	23.7	27.2	28.6	30.2	31.9
2	-30	17.4	19.7	20.6	21.6	22.7	18.6	21.1	22.1	23.2	24.4	19.9	22.7	23.8	25.0	26.3	23.0	26.3	27.7	29.1	30.8
0	-25	16.7	18.9	19.8	20.7	21.8	17.9	20.3	21.3	22.3	23.5	19.2	21.9	22.9	24.0	25.3	22.2	25.4	26.7	28.1	29.6
0	-20	16.1	18.2	19.0	19.9	20.9	17.3	19.5	20.4	21.4	22.5	18.5	21.0	22.0	23.1	24.3	21.4	24.4	25.7	27.0	28.5
0	-15	15.5	17.4	18.2	19.1	20.0	16.6	18.8	19.6	20.6	21.6	17.8	20.2	21.1	22.2	23.3	20.6	23.5	24.7	26.0	27.4
	-10	14.8	16.7	17.4	18.2	19.1	15.9	18.0	18.8	19.7	20.7	17.1	19.4	20.3	21.3	22.3	19.9	22.6	23.7	24.9	26.3
	-5	14.2	15.9	16.6	17.4	18.2	15.2	17.2	18.0	18.8	19.7	16.4	18.6	19.4	20.3	21.3	19.1	21.7	22.7	23.9	25.1
	0	13.5	15.2	15.8	16.5	17.3	14.6	16.4	17.1	17.9	18.8	15.7	17.7	18.5	19.4	20.4	18.3	20.8	21.8	22.8	24.0
	5	12.7	14.2	14.9	15.5	16.2	13.7	15.4	16.1	16.8	17.6	14.8	16.7	17.5	18.3	19.2	17.3	19.7	20.6	21.6	22.7
	10	11.7	13.2	13.7	14.3	15.0	12.7	14.3	14.9	15.6	16.3	13.8	15.5	16.2	17.0	17.8	16.2	18.4	19.2	20.1	21.2
	15	10.8	12.1	12.6	13.1	13.7	11.7	13.2	13.7	14.3	15.0	12.8	14.4	15.0	15.7	16.4	15.1	17.1	17.8	18.7	19.6
	20	9.8	10.9	11.4	11.9	12.4	10.7	12.0	12.5	13.0	13.6	11.7	13.1	13.7	14.3	15.0	13.9	15.7	16.4	17.2	18.0
	25	8.8	9.8	10.2	10.6	11.1	9.6	10.8	11.2	11.7	12.3	10.6	11.9	12.4	12.9	13.5	12.7	14.3	15.0	15.7	16.4
	30	7.8	8.7	9.1	9.5	9.9	8.6	9.7	10.1	10.5	11.0	9.5	10.7	11.1	11.6	12.2	11.6	13.0	13.6	14.2	14.9
1	-35	16.7	18.9	19.8	20.7	21.8	17.9	20.3	21.3	22.3	23.5	19.2	21.9	22.9	24.1	25.3	22.2	25.4	26.7	28.1	29.7
4	-30	16.1	18.2	19.0	19.9	20.9	17.3	19.6	20.5	21.5	22.6	18.6	21.1	22.1	23.2	24.4	21.5	24.5	25.8	27.1	28.6
0	-25	15.5	17.5	18.3	19.2	20.1	16.7	18.9	19.7	20.7	21.7	17.9	20.3	21.3	22.3	23.4	20.7	23.7	24.8	26.1	27.5
0	-20	14.9	16.8	17.6	18.4	19.3	16.0	18.1	18.9	19.8	20.8	17.3	19.5	20.4	21.4	22.5	20.0	22.8	23.9	25.1	26.4
0	-15	14.3	16.1	16.8	17.6	18.4	15.4	17.4	18.2	19.0	19.9	16.6	18.8	19.6	20.5	21.6	19.3	21.9	23.0	24.1	25.4
0	-10	13.7	15.4	16.1	16.8	17.6	14.8	16.6	17.4	18.2	19.1	15.9	18.0	18.8	19.7	20.7	18.6	21.1	22.1	23.2	24.4
	-5	13.1	14.7	15.3	16.0	16.7	14.1	15.9	16.6	17.3	18.2	15.2	17.2	18.0	18.8	19.7	17.8	20.2	21.1	22.2	23.3
	0	12.4	14.0	14.5	15.2	15.9	13.5	15.1	15.8	16.5	17.3	14.6	16.4	17.1	17.9	18.8	17.0	19.3	20.2	21.2	22.2
	5	11.6	13.0	13.5	14.1	14.8	12.6	14.1	14.7	15.4	16.1	13.6	15.4	16.0	16.8	17.6	16.1	18.2	19.0	19.9	20.9
	10	10.8	12.0	12.5	13.1	13.7	11.7	13.1	13.7	14.3	14.9	12.7	14.3	14.9	15.6	16.3	15.1	17.0	17.8	18.6	19.5
	15	9.8	11.0	11.4	11.9	12.4	10.7	12.0	12.5	13.1	13.7	11.7	13.2	13.7	14.3	15.0	14.0	15.7	16.4	17.2	18.1
	20	8.9	9.9	10.3	10.7	11.2	9.7	10.9	11.3	11.8	12.4	10.7	12.0	12.5	13.0	13.6	12.8	14.4	15.1	15.8	16.5
	25	7.9	8.8	9.2	9.5	10.0	8.7	9.8	10.2	10.6	11.1	9.6	10.8	11.2	11.7	12.3	11.7	13.1	13.7	14.3	15.0
	28	7.2	8.0	8.3	8.7	9.1	8.0	8.9	9.3	9.7	10.1	8.9	9.9	10.3	10.8	11.3	10.8	12.2	12.7	13.3	13.9
1	-35	15.5	17.5	18.3	19.1	20.1	16.7	18.8	19.7	20.6	21.7	17.9	20.3	21.2	22.3	23.4	20.7	23.6	24.8	26.1	27.5
4	-30	14.9	16.8	17.6	18.4	19.3	16.0	18.1	18.9	19.8	20.8	17.3	19.5	20.4	21.4	22.5	20.0	22.8	23.9	25.1	26.5
0	-25	14.4	16.2	16.9	17.6	18.5	15.4	17.4	18.2	19.0	20.0	16.6	18.8	19.7	20.6	21.6	19.3	22.0	23.0	24.2	25.5
0	-20	13.8	15.5	16.2	16.9	17.7	14.9	16.7	17.5	18.3	19.2	16.0	18.1	18.9	19.8	20.8	18.6	21.2	22.2	23.3	24.5
0	-15	13.2	14.8	15.5	16.2	16.9	14.3	16.0	16.7	17.5	18.3	15.4	17.4	18.1	19.0	19.9	18.0	20.4	21.3	22.4	23.5
0	-10	12.6	14.2	14.8	15.4	16.1	13.6	15.3	16.0	16.7	17.5	14.8	16.6	17.3	18.1	19.0	17.3	19.5	20.4	21.4	22.5
	-5	12.0	13.5	14.0	14.6	15.3	13.0	14.6	15.2	15.9	16.7	14.1	15.9	16.5	17.3	18.1	16.5	18.7	19.6	20.5	21.5
	0	11.4	12.7	13.2	13.8	14.4	12.3	13.8	14.4	15.0	15.7	13.4	15.0	15.7	16.4	17.2	15.8	17.8	18.6	19.5	20.5
	5	10.6	11.9	12.3	12.9	13.4	11.5	12.9	13.5	14.1	14.7	12.6	14.1	14.7	15.4	16.1	14.9	16.8	17.5	18.3	19.2
	10	9.8	11.0	11.4	11.9	12.4	10.7	12.0	12.5	13.0	13.6	11.7	13.1	13.7	14.3	15.0	14.0	15.7	16.4	17.2	18.0
	15	8.9	9.9	10.3	10.8	11.2	9.8	10.9	11.4	11.9	12.4	10.7	12.0	12.5	13.0	13.6	12.9	14.5	15.1	15.8	16.5
	20	8.0	8.9	9.2	9.6	10.0	8.8	9.8	10.2	10.7	11.1	9.7	10.9	11.3	11.8	12.3	11.8	13.2	13.8	14.4	15.1
	25	7.0	7.8	8.1	8.5	8.8	7.8	8.7	9.1	9.5	9.9	8.7	9.7	10.1	10.6	11.0	10.7	12.0	12.5	13.0	13.6
	26	6.7	7.5	7.8	8.1	8.4	7.5	8.4	8.7	9.1	9.5	8.4	9.3	9.7	10.1	10.6	10.3	11.5	12.0	12.6	13.2

**FOR ANTI-ICE SYSTEMS ON, SUBTRACT 7 FROM ABOVE CLIMB GRADIENTS.



Figure 4-39 (Sheet 8 of 8)

SUPPLEMENTS

INTRODUCTION

The supplements in this section contain amended operating limitations, operating procedures, performance data and other necessary information for airplanes conducting special operations and for airplanes equipped with specific options. Operators should refer to each supplement to ensure that all limitations and procedures appropriate for their airplane are observed.

Supplements for the installed optional equipment must be maintained to the latest revision. Those supplements applicable to optional equipment which is not installed in the airplane, do not have to be retained.

A non FAA Approved Log of Supplements is provided for convenience only. This log is a numerical list of all the supplements published for this airplane and shows, also, the number of revisions made to each supplement at the time of this revision.

Each supplement is preceded by a Log of Effective Pages which will be part of the supplement package. Supplement page numbers will include an S and the supplement number.

LOG OF APPROVED SUPPLEMENTS

SUPPLEMENT NUMBER	NAME	REVISION NUMBER	EQUIPMENT INSTALLED
1	Bendix/King CAS67A Traffic Alert And Collision Avoidance System II (TCAS II)	1	_____
2	Global GNS-X/ES Flight Management System	2	_____
3	Allied Signal MK VI Ground Proximity Warning System (GPWS)	1	_____
4	Sundstrand Cockpit Voice Recorder	1	_____
5	Fairchild Cockpit Voice Recorder	0	_____
6	High Altitude Takeoff And Landing (Above 12,000 Feet Pressure Altitude)	0	_____
7	Heads Up Technologies CMS-400 Audio Checklist	0	_____
8	Sundstrand Flight Data Recorder	0	_____
9	Reserved	0	_____
10	Bendix/King CAS66A Traffic Alert And Collision Avoidance System I (TCAS I)	1	_____
11	Audio Checklist (With Or Without Cabin Briefer)	0	_____
12	EROS Oxygen Mask	0	_____
13	BFGoodrich WX-950/WX-1000 + Stormscope	1	_____
14	Airplanes Certified To Dutch Configuration	0	_____
15	Garmin GPS 165 Global Positioning System (Coupled)	2	_____
16	Garmin GPS 165 Global Positioning System (Stand-Alone)	1	_____
17	German Registered Airplanes	4	_____
18	Airplanes Certified To Canadian Configuration	1	_____
19	Fairchild Solid State Cockpit Voice Recorder Model A100S or A200S	1	_____
20	Fairchild F1000 Solid State Flight Data Recorder	0	_____
21	Dual Global GNS-X/ES Flight Management System With C129 GPS	1	_____
22	Precise Flight - Pulselite System	0	_____

Sheet 1 of 3

LOG OF APPROVED SUPPLEMENTS

SUPPLEMENT NUMBER	NAME	REVISION NUMBER	EQUIPMENT INSTALLED
23	AlliedSignal GNS-X _{LS} With GPS Fault Detection And Exclusion (FDE) (Single or Dual)	3	_____
24	Gravel Runway Modification	0	_____
25	Austrian Registered Airplanes	1	_____
26	Universal UNS-1Csp Flight Management System	3	_____
27	German Registered Airplanes Certified For Steep Approaches And Short Field Landing Operations	1	_____
28	US Army UC-35A	9	_____
29	Global GNS-X _L Flight Management System	3	_____
30	Trimble TNL-2000T Global Positioning System	0	_____
31	Cockpit Speaker Audio Inhibit Switch	0	_____
32	Allied Signal MK VII Warning System STC ST00466WI	0	_____
33	Greek Registered Airplanes Certified For Steep Approaches	0	_____
34	Lead Acid Battery Installation	0	_____
35	Global GNS-X/ES Flight Management System With C129 GPS	2	_____
36	SafeFlight N ₁ Reminder	0	_____
37	Fairchild F1000 Solid State Flight Data Recorder STC - ST00637WI	0	_____
38	AlliedSignal KLN 900 GPS Navigation System	0	_____
39	Dual Safe Flight Angle-of-Attack/Stall Warning System	0	_____
40	Reduced Vertical Separation Minimum	2	_____
41	Precise Flight - Automatic Pulselite System	1	_____
42	Argus 7000 Moving Map Display	0	_____
43	Airplanes Certified To Russian Configuration	0	_____
44	AlliedSignal Enhanced Ground Proximity Warning System Without Terrain Awareness Display	0	_____
45	Flood Cooling System	0	_____

Sheet 2

LOG OF APPROVED SUPPLEMENTS

SUPPLEMENT NUMBER	NAME	REVISION NUMBER	EQUIPMENT INSTALLED
46	AlliedSignal Solid State Flight Data Recorder With Teledyne Miniature Flight Data Acquisition Unit	0	_____
47	AlliedSignal Enhanced Ground Proximity Warning System with Terrain Awareness Display	0	_____
48	Trimble 2101 I/O GPS (Coupled)	0	_____
49	Dual 28VDC Auxiliary Power System	0	_____
50	Copilot's Standby Jet Gyro (RH Standby Gyro)	0	_____
51	Reserved for 560-0284	0	_____
52	Universal UNS-1K (Single or Dual) Flight Management System	0	_____
53	Single Point Fuel Door Monitor	0	_____
54	AlliedSignal GNS-X _L and GNS-X _{LS} Flight Management System Installation	0	_____
55	UC-35C/UC-35A	8	_____
56	AN/ARC-210 With Embedded Encryption And Dama Modem	0	_____
57	C-5000 Flexcom	0	_____
58	AN/ARN - 154 Tacan	0	_____
59	Foot Activated Microphone Switch	0	_____
60	XS-950 S/I Mode S Transponder/IFF	0	_____
61	Shadin Engine Trend Monitor	0	_____
62	KHF 950/990 ALE HF	0	_____
63	KY58 Secure Speech	0	_____
64	TT-3000 Aero-M Satcom	0	_____
65	AlliedSignal Aerospace CAS 67A TCAS II Change 7.0 and ACAS II	0	_____
66	Austrian Registered Airplanes Certified for Steep Approaches and Short Field Operations	0	_____
67	Spanish Registered Airplanes Certified for Steep Approaches and Short Field Landing Operations	0	_____

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

UNIT -0260 AND ON

SUPPLEMENT 1

**BENDIX/KING CAS67A TRAFFIC ALERT AND
COLLISION AVOIDANCE SYSTEM II**

APPROVED BY *Everett W. Pittman*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 3/29/95

29 MARCH 1995

SUPPLEMENT 1

BENDIX/KING CAS67A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM II


Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	29 March 1995
Revision 1	1 December 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S1-1	Revised	1	S1-AA
* S1-2	Revised	1	S1-AA
S1-3	Original	0	S1-AA
S1-4	Original	0	S1-AA
* S1-5 thru			
S1-9	Revised	1	S1-AA
S1-10	Original	0	S1-AA
S1-11	Original	0	S1-AA
* S1-12	Revised	1	S1-AA
* S1-13/S1-14	Added	1	S1-AA

APPROVED BY 
for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 12/1/95

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S1-AA	Airplanes Equipped with Optional Bendix/King CAS67A Traffic Alert and Collision Avoidance System II with 6.04A Enhanced Software.

BENDIX/KING CAS67A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM II

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Bendix/King CAS67A Traffic Alert and Collision Avoidance System II. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. The Bendix/King CAS67A TCAS II Pilot's Manual, Publication No. 006-08499-0000, Revision 2, dated 2 September 1994, or appropriate later revision must be readily available to the flight crew when operating the CAS67A TCAS II unit.
2. Pilot's are authorized to deviate from their current ATC clearance to the extent necessary to comply with a TCAS II resolution advisory.
3. If ATC requires that the transponder altitude reporting be disabled, TCAS must be turned off.
4. Airplanes equipped with Honeywell Primus II radios must have the TCAS DSPY 1/2 window enabled only in RMU 1 during all operations other than SG2 reversion. During SG2 reversion, the TCAS DSPY 1/2 window must be enabled only in RMU 2. Refer to the Honeywell Primus II radio description in this supplement.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

1. If an engine failure occurs, and when time permits, turn the TCAS II system to "TA ONLY" mode on the TCAS/Mode S control panel.

NOTE

RAs are predicated on all engines operating. RA climb performance may not be achievable during engine-out operation.

ABNORMAL PROCEDURES

TCAS FAILURE (AMBER TCAS FAIL ANNUNCIATION ON MFD/PFD)

1. Transponder - OPERATE NORMALLY.
2. TCAS Attitude, Heading and Radio Altitude Inputs - CHECK.

RA FAILURE (AMBER RA FAIL ANNUNCIATION ON PFD)

1. TCAS/Mode S Control - TA/RA.

IF RA FAILURE LIGHT REMAINS ON

2. The pilot with an operating RA/VSI should conduct any subsequent maneuvers commanded by a RA (resolution advisory).

SYMBOL GENERATOR 1 FAILURE OR RMU 1 FAILURE (PRIMUS II RADIO INSTALLATIONS ONLY)

1. MFD Controller Mode Select Knob - SELECT SG2.
2. PFD display - VERIFY amber SG2 annunciated in both PFD's.

NOTE

The Pilot's side mode select panel will be inoperative. FD modes and Autopilot coupling (if desired) must be selected from non-reversion side only.

3. TCAS DSPY 1/2 Window in RMU's - DISABLE in RMU 1 and ENABLE in RMU 2 (Refer to Primus II radio description in this supplement).

NORMAL PROCEDURES

1. Refer to the appropriate Bendix/King CAS67A TCAS II Pilot's Manual described in the Limitation Section.
2. TCAS II Operating Constraints:
 - a. INCREASE DESCENT RAs are inhibited below 1450 feet AGL.
 - b. All RAs are inhibited and TCAS II will go into the TA only mode when the airplane is below 900 feet AGL during descent and below 1100 feet AGL during climb. All aural alerts will also be inhibited.
 - c. Airplanes on the ground are not displayed by TCAS.
 - d. If intruder track or altitude information is lost during an RA occurrence, the RA will terminate without a "CLEAR OF CONFLICT" annunciation.
 - e. TCAS RA algorithms are based on the pilot starting the initial maneuver within 5 seconds, and within 2 1/2 seconds if an additional corrective RA (increase or reverse) is issued.
3. Preflight Test - Activate the self test mode per the procedures specified for the type of transponder control installed in the airplane. The aural annunciation "TCAS SYSTEM TEST OK" advises the minimum required equipment is available and operational. "TCAS SYSTEM TEST FAIL" is announced if the minimum required equipment complement is not available.

NOTE

The self-test will affect normal TCAS operation for up to twelve seconds, if initiated in flight.

4. Ground Operation

BEFORE TAKEOFF

- a. The TCAS II should not be selected to "TA" or "TA/RA" until just prior to takeoff.
- b. The TCAS display selector should be set to AUTO SEL.

AFTER LANDING

- a. The TCAS II should be selected to standby immediately after clearing runway.

5. TCAS II Flight Procedures

- a. TCAS Traffic Advisory

Using the information on the MFD TCAS display, commence a visual search for the intruder. If and only if, the intruder is visually acquired, maneuver the airplane to maintain safe separation.

CAUTION

EVASIVE MANEUVERS BASED SOLELY ON TCAS TRAFFIC ADVISORIES, WITHOUT VISUAL ACQUISITION OF INTRUDER ARE NOT RECOMMENDED.

NOTE

If the TCAS II aural advisory of "TRAFFIC TRAFFIC" occurs, an intruder airplane is within approximately 40 seconds of the closest point of approach to your airplane.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

b. TCAS Resolution Advisory

CAUTION

- ONCE AN RA HAS BEEN ISSUED, SAFE SEPARATION COULD BE COMPROMISED IF CURRENT VERTICAL SPEED IS CHANGED, EXCEPT AS NECESSARY TO COMPLY WITH THE RA. THIS IS BECAUSE TCAS II-TO-TCAS II COORDINATION MAY BE IN PROGRESS WITH THE INTRUDER AIRPLANE, AND ANY CHANGE IN VERTICAL SPEED THAT DOES NOT COMPLY WITH THE RA MAY NEGATE THE EFFECTIVENESS OF THE OTHER AIRPLANE'S COMPLIANCE WITH THE RA.
- IT IS POSSIBLE IN SOME CASES TO HAVE INSUFFICIENT AIRPLANE PERFORMANCE TO FOLLOW THE TCAS COMMAND WITHOUT FLYING INTO STALL WARNING OR BUFFET. CONDITIONS WHERE THIS MAY OCCUR INCLUDE:
 1. BANK ANGLE IN EXCESS OF 15 DEGREES.
 2. OPERATION AT AIRPORTS ABOVE 5300 FEET MSL OR TEMPERATURES GREATER THAN ISA + 50°F.
 3. ENGINE INOPERATIVE.
 4. FAILURE TO CONFIGURE THE AIRPLANE TO GO-AROUND FOLLOWING A CLIMB RA IN LANDING CONFIGURATION.
 5. FAILURE TO ADVANCE THRUST TO FULL RATING FOLLOWING REDUCED THRUST TAKEOFF.
 6. SPEEDS LESS THAN NORMAL OPERATING SPEED.
 7. ABNORMAL CONFIGURATIONS WHICH REDUCE PERFORMANCE (I.E. GEAR NOT RETRACTABLE).
 8. TCAS COMMAND REVERSAL TO A "CLIMB - CLIMB NOW".
 9. BUFFET MARGIN LESS THAN .3G.

NOTE

- The consequences of not following an RA may result in additional RA's in which aural alert and visual annunciations may not agree with each other.
- Using every available means, clear the airspace into which you are going to maneuver. If needed, promptly and smoothly adjust your airplane's vertical rate so as to keep the VSI needle just outside the red area on the VSI. This should require no more than 0.75g to 1.25g maneuver ($\pm 0.25g$).
- If high speed buffet is encountered when initially responding to an RA, relax pitch force as necessary to reduce buffet, but still continue to maneuver.
- If stall warning occurs during an RA maneuver, immediately abandon the RA and execute stall recovery procedures. TCAS II will continue to provide RAs during stall warning and recovery procedure.
- Exaggerated responses to TCAS RAs are not desirable or appropriate because of the other potential traffic conflicts and ATC consequences. From level flight, proper response to TCAS RA typically results in an overall altitude deviation of 300 to 500 feet in order to successfully resolve a traffic conflict.

(Continued Next Page)

NORMAL PROCEDURES (Continued)**NOTE** (Continued)

- If a CLIMB RA is issued with the airplane in the landing configuration, a normal go-around should be initiated including the appropriate thrust increase and configuration change.
 - Flight Director Pitch commands should not be followed unless they result in a vertical speed which satisfies the RA command.
 - The pilot should not initiate evasive maneuvers using information from the traffic display only or on a Traffic Advisory only, without visually acquiring the traffic.
 - Compliance with TCAS resolution advisories is required unless the pilot considers it unsafe to do so.
 - The pilot should promptly return to the previous ATC clearance after the TCAS voice message "Clear of Conflict" is announced.
 - An immediate, smooth response to an RA is required to obtain maximum separation. While TCAS II algorithms are based upon the pilot initiating the initial maneuver within five (5) seconds of the RA, and within two and a-half (2 1/2) seconds for additional corrective RA's (increases or reversals), any delay in responding to RA's will reduce the separation provided.
6. TCAS II range selection:
- a. A 10 NM (or lower) range may be selected for takeoff, low altitude climb, approach and landing, and below 10,000 feet.
 - b. A 10 NM (or greater) range may be selected for high altitude cruise.
 - c. The range selected has no effect on the TCAS II logic giving TA's and RAs.

NOTE

If the TCAS traffic map display is removed from the MFD, it should be selected (either manually or automatically) to a usable range. A range of 5 or 10 NM is recommended.

7. TA only mode:
- a. The TA position on the control panel gives TA only mode and should only be used to preclude unnecessary RAs when operating near closely spaced parallel runways.
 - b. All resolution advisories (RAs) are inhibited when TA only mode is selected.
 - c. The TA only mode should be selected following an in-flight engine shutdown.
8. TCAS traffic advisory annunciations (TA):

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW POSITION</u>
"TRAFFIC, TRAFFIC"	Amber filled circle on the MFD TCAS display.	Conduct visual search for the intruder. If successful, maintain visual acquisition to ensure safe operation.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

9. TCAS resolution advisory annunciations (RA):

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW POSITION</u>
"CLIMB, CLIMB, CLIMB"	VSI RED from -6000FPM to + 1500 FPM and GREEN from + 1500 FPM to + 2000 FPM.	Promptly, and smoothly, establish a 1500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"DESCEND, DESCEND, DESCEND"	VSI RED from + 6000 FPM to - 1500 FPM and GREEN from -1500 FPM to -2000 FPM.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"MONITOR VERTICAL SPEED, MONITOR VERTICAL SPEED"	Present vertical speed is outside the RED arc as shown on the VSI.	Keep vertical speed out of the RED, unsafe, area as indicated on the VSI.
"REDUCE CLIMB, REDUCE CLIMB"	VSI indicates prohibited vertical speed in RED. GOAL is vertical speed GREEN.	Promptly, and smoothly, reduce vertical speed to that shown in the GREEN arc as indicated on the VSI.
"CLIMB CROSSING CLIMB, CLIMB CROSSING CLIMB"	Same as "CLIMB" and further indicates that own flight path will cross that of the intruder.	Promptly, and smoothly, establish a 1500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"DESCEND CROSSING DESCEND, DESCEND CROSSING DESCEND"	Same as "DESCEND" and further indicates that own flight path will cross that of the intruder.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"CLEAR OF CONFLICT"	VSI RED and GREEN arcs removed. Range is increasing, and is adequate.	Promptly, and smoothly, assigned altitude.
"INCREASE CLIMB, INCREASE CLIMB"	Follows a "CLIMB" advisory. VSI RED from -6000 FPM to + 2500 and GREEN from + 2500 FPM to + 3500 FPM. Indicates the vertical speed MUST BE INCREASED to ensure adequate separation.	Promptly, and smoothly, establish a 2500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"INCREASE DESCENT, INCREASE DESCENT"	Follows a "DESCENT" advisory. VSI RED from + 6000 FPM to - 2500 and GREEN from -2500 FPM to -3500 FPM. Indicates the vertical speed MUST BE INCREASED to ensure adequate separation.	Promptly, and smoothly, establish a 2500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"CLIMB, CLIMB NOW, CLIMB, CLIMB NOW"	Follows a "DESCENT" advisory when it has been determined that a reversal of vertical speed (direction) is needed to provide adequate vertical separation.	Promptly, and smoothly, establish a 1500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"DESCENT, DESCENT NOW, DESCENT, DESCENT NOW"	Follows a "CLIMB" advisory when it has been determined that a reversal of vertical speed (direction) is needed to provide adequate vertical separation.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.

PERFORMANCE

No Change.

DESCRIPTION

The traffic alert and collision avoidance system is an independent airborne system. It is designed to act as a back-up to the Air Traffic Control system and the “see and avoid” concept. TCAS consists of six airplane-mounted antennas, a TCAS computer unit and dual Mode S transponders; displays and controls are located in the cockpit. The following options are operational:

- a. The TCAS is wired to display all traffic on the MFD display.
- b. The TCAS display range is pilot selectable.
- c. The TCAS system will automatically be in “TA ONLY” and not in standby when on the ground (and the TCAS system is active). Pilot selectable self-test is not inhibited in flight.
- d. A Test Pattern is displayed on the PFD/MFD during the pilot initiated TCAS II self-test.

TCAS has a surveillance volume defined by a minimum horizontal radius of 14 nautical miles and a minimum vertical range of plus or minus 12,700 feet. TCAS continually surveys the airspace around an airplane, seeking replies from other airplane in the vicinity via their ATC transponders. The transponder replies are tracked by the TCAS system. Flight paths are predicted based upon these tracks. Flight paths predicted to penetrate a collision area surrounding the TCAS airplane are annunciated by TCAS.

TCAS generates two types of annunciations: a Traffic Advisory (TA) and a Resolution Advisory (RA). The airspace around the TCAS airplane can be divided into caution and warning areas. The physical dimensions of these areas are time-based and vary as a function of horizontal and vertical closure speed and distance from an intruder airplane.

TCAS monitors a time-based dimension of a caution area that extends 35-45 seconds from the time the intruder airplane is predicted to enter the TCAS airplane’s collision area. If an intruder airplane enters the caution area, traffic information in the form of a TA is issued by TCAS. The traffic displayed includes the range, bearing and altitude of the intruder relative to the TCAS airplane. This information is to aid in visually locating the intruder to avoid a conflict.

TCAS also monitors a time-based dimension area that extends 20-25 seconds from the time at which an intruder would enter TCAS’s airplane collision area. If an intruder enters the warning area, an RA is issued by TCAS. The RA is a vertical maneuver recommended to the pilot by TCAS in order to increase or maintain vertical separation relative to the intruder airplane. The RA is annunciated both visually and aurally. It may consist of either a corrective advisory, advising a change in airplane vertical rate, or a preventive, restricting vertical speed.

TCAS continuously calculates tracked airplane projected positions. TAs and RAs are therefore constantly updated and provide realtime advisory and position information.

(Continued Next Page)

DESCRIPTION (Continued)

Once the flight path of the intruder no longer conflicts with the collision area of the TCAS airplane, TCAS will announce "CLEAR OF CONFLICT". The flight crew should then return to the original clearance profile.

TCAS generates TAs and RAs against intruder airplane with ATC transponders replying in Mode C and Mode S. TCAS requires altitude information from intruder airplane to generate RAs. TCAS can only provide TAs for intruder airplanes whose transponders reply in Mode A (non-altitude reporting).

CAUTION

TCAS CANNOT PROVIDE AN ALERT FOR TRAFFIC CONFLICTS WITH AIRPLANES WITHOUT OPERATING TRANSPONDERS.

If an installation includes a windshear warning system and/or a ground proximity warning system, in conjunction with TCAS II system, the aural warning priority is as follows:

1. Windshear Warning
2. Ground Proximity Warning
3. TCAS II Warning

TCAS generates a traffic map display of nearby airplanes that may be displayed on the MFD. This display may be added to the MFD manually by the TCAS button on the MC-800 MFD display controller or it may be selected to auto-pop-up. For airplanes equipped with Collins radios, control of this feature is selected by the TCAS display control button show in Figure S1-1. For airplanes equipped with Honeywell Primus II radios, control of the auto-pop-up feature is via the RMU (refer to Honeywell Primus II radio description in this supplement).

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Figure S1-1

- a. TCAS DSP AUTO SEL - In this mode, the TCAS traffic map display will auto-pop-up anytime a PA, TA or RA event occurs, except for Honeywell Primus II installations which auto-pop-up only on TA and RA events. The map will remain in view for the duration of the event, plus 10 seconds. The traffic map display may still be brought up manually at any time by the TCAS button on the MC-800 display controller.

(Continued Next Page)

DESCRIPTION (Continued)

- b. TCAS DSP MAN SEL - In this mode, the TCAS traffic map must be brought up manually by the TCAS button on the MC-800 display controller. The auto-pop-up feature is disabled. All TA or RA events will continue to be aurally annunciated.

AIRPLANES EQUIPPED WITH HONEYWELL PRIMUS II RADIOS

Control of transponder and TCAS operating modes is accomplished through a common ATC/TCAS window within each RMU. Either RMU may be used to select operating mode and set squawk code, with the opposite RMU slaving to the last control input.

Control of the TCAS display on the MFD is accomplished via the TCAS DSPY 1/2 window, normally enabled only on RMU 1 (RMU 1 is considered the on-side control since SG1 drives the MFD during normal operation). The TCAS display range and ABOVE/NORM/BELOW functions are selected in this window. During SG2 reversion, this window should be disabled on RMU 1 and enabled on RMU 2 by accessing RMU SETUP on the MAINTENANCE page of each RMU and making the appropriate "ENABLE/DISABLE" selection for TCAS display.

NOTE

Only one RMU should have the TCAS DSPY 1/2 window enabled (refer to Operating Limitations). Failure to observe this limitation could result in erratic MFD TCAS display indications. TCAS function, aural traffic alerts, and resolution advisories are otherwise unaffected.

The auto-pop-up feature is enabled/disabled by selecting AUTO/MAN as desired on the RMU ATC/TCAS page. In the auto mode, the MFD TCAS display will auto-pop-up on any TA or RA event. In the manual mode, the traffic display must be selected by the TCAS button on the MFD controller.

NOTE

If AUTO is selected, pressing the TCAS button on the MFD controller will manually display only TA and RA traffic. If it is desired to observe all traffic, the display mode must be selected to MAN on the RMU ATC/TCAS page.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 2
GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM

APPROVED BY Carla Boeckh

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 27, 1994

27 MAY 1994

SUPPLEMENT 2

GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM


Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	27 May 1994
Revision 1	21 June 1994
Revision 2	14 November 1994

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S2-1 thru			
S2-4	Revsied	2	S2-AA
S2-5	Original	0	S2-AA
* S2-6	Revised	2	S2-AB
* S2-6.1	Added	2	S2-AC
S2-7	Original	0	S2-AA
S2-8	Revised	1	S2-AA
* S2-9	Revised	2	S2-AB
* S2-9.1	Added	2	S2-AC
S2-10	Revised	1	S2-AA

APPROVED BY 
 for Everett W. Pittman, Manager
 Aircraft Certification Office
 Federal Aviation Administration
 Wichita, Kansas
 DATE OF APPROVAL 11/14/94

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-34-51	Navigation - P-1000 Avionics System Software Improvement	560-0260 thru -0278 and -0280 thru -0289	2	

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this basic manual.

<u>Configuration Code</u>	<u>Effectivity by Unit Number</u>
S2-AA	Airplanes Equipped with Optional Global GNS-X/ES Flight Management System
S2-AB	Airplanes 560-0279 and -0290 and on and Airplanes -0260 thru -0278 and -0280 thru -0289 incorporating SB560-34-51
S2-AC	Airplanes 560-0260 thru -0278 and -0280 thru -0289 not incorporating SB560-34-51

GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Global GNS-X/ES Flight Management System. The GNS-X/ES system may also include an optional AFIS. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

The GNS-X/ES with any combination of VLF/OMEGA or LORAN-C, VOR/DME and GPS sensors has been demonstrated to meet the accuracy criteria of Advisory Circular 20-130 and is approved for VFR/IFR navigation within the conterminous United States and Alaska as specified in the limitations below. When the VLF/Omega or LORAN-C sensor is installed and operating, the GNS-X/ES has been demonstrated to meet the accuracy criteria of Advisory Circular 91-49, change 1 for navigation within the North Atlantic MNPS airspace.

OPERATING LIMITATIONS

GENERAL

1. The GNS Operator's Manual, Report Number 1425 with the following applicable or later revisions, must be available to the flight crew whenever navigation is predicated on the use of the GNS-X.
2. The GNS-X/ES is not approved as the sole means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME etc.).
3. The GNS-X/ES position information must be checked for accuracy (reasonableness) prior to use as a means of navigation. The GNS-X/ES position should be updated when a cross-check with other approved navigation equipment reveals an error greater than 3 NM, along-track or cross-track.
4. Navigation within the national airspace system shall not be predicated upon the GNS-X/ES during periods of dead reckoning (DR).
5. Following a period of dead reckoning, position should be verified by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
6. The GNS-X/ES is not to be used as the primary reference in terminal areas, during approaches to or departures from airports unless the VPU sensor is operating and contributing to the position solution.
7. When latitude/longitude transferred from the internal data base (IDB) is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
8. The internal data base (IDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Global-Wulfsberg Systems update disk or equivalent. Update disks will be received by mail (to subscribers) or obtained from authorized Global Wulfsberg installation centers or update centers.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

9. The fuel management mode is for advisory purposes only and it does not replace the airplane primary fuel flow and fuel quantity systems.
10. When operating outside the magnetic variation model area (North of 70 degrees North latitude or South of 60 degrees South latitude), the pilot must manually insert magnetic variation.
11. The GNS-X/ES with LORAN-C and/or VLF/OMEGA sensors may be used in the North Atlantic Track - Minimum Navigation Performance Specification (NAT-MNPS) Airspace provided the proper documentation and approval is obtained and dual navigation systems are installed in accordance with Advisory Circular 91-49.
12. It is the responsibility of the pilot in command to exercise reasonable and prudent judgement in the use of the advisory services of the optional AFIS.

LORAN-C

1. Navigation may not be predicated on LORAN-C when operating outside the approved LOA boundaries as shown in the GNS-X/ES operators manual, or when the LORAN-C sensor is in DR.

VLF/OMEGA

1. Navigation may not be predicated on VLF/OMEGA when the VLF/OMEGA Sensor is in DR.
2. The GNS-X/ES with only the VLF/OMEGA sensor operating is not approved for operation into valleys; eg. between peaks in mountainous terrain.

GPS

1. The Global Positioning System (GPS) sensor is approved as a contributing sensor for navigation provided:
 - a. The GPS sensor may not be the only sensor selected for use.

AND
 - b. It is receiving four or more satellites and the GDOP is six or less and the sensor is not using altitude.

OR
 - c. The system is receiving three or more satellites and the GDOP, using altitude, is ten or less.
2. Manually entered altitude may be used only after failure of the automatic inputs and must be updated every 5 minutes.

(Continued Next Page)

GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Global GNS-X/ES Flight Management System. The GNS-X/ES system may also include an optional AFIS. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

The GNS-X/ES with any combination of VLF/OMEGA or LORAN-C, VOR/DME and GPS sensors has been demonstrated to meet the accuracy criteria of Advisory Circular 20-130 and is approved for VFR/IFR navigation within the conterminous United States and Alaska as specified in the limitations below. When the VLF/Omega or LORAN-C sensor is installed and operating, the GNS-X/ES has been demonstrated to meet the accuracy criteria of Advisory Circular 91-49, change 1 for navigation within the North Atlantic MNPS airspace.

OPERATING LIMITATIONS

GENERAL

1. The GNS Operator's Manual, Report Number 1425 with the following applicable or later revisions, must be available to the flight crew whenever navigation is predicated on the use of the GNS-X.
2. The GNS-X/ES is not approved as the sole means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME etc.).
3. The GNS-X/ES position information must be checked for accuracy (reasonableness) prior to use as a means of navigation. The GNS-X/ES position should be updated when a cross-check with other approved navigation equipment reveals an error greater than 3 NM, along-track or cross-track.
4. Navigation within the national airspace system shall not be predicated upon the GNS-X/ES during periods of dead reckoning (DR).
5. Following a period of dead reckoning, position should be verified by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
6. The GNS-X/ES is not to be used as the primary reference in terminal areas, during approaches to or departures from airports unless the VPU sensor is operating and contributing to the position solution.
7. When latitude/longitude transferred from the internal data base (IDB) is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
8. The internal data base (IDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Global-Wulfsberg Systems update disk or equivalent. Update disks will be received by mail (to subscribers) or obtained from authorized Global Wulfsberg installation centers or update centers.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

9. The fuel management mode is for advisory purposes only and it does not replace the airplane primary fuel flow and fuel quantity systems.
10. When operating outside the magnetic variation model area (North of 70 degrees North latitude or South of 60 degrees South latitude), the pilot must manually insert magnetic variation.
11. The GNS-X/ES with LORAN-C and/or VLF/OMEGA sensors may be used in the North Atlantic Track - Minimum Navigation Performance Specification (NAT-MNPS) Airspace provided the proper documentation and approval is obtained and dual navigation systems are installed in accordance with Advisory Circular 91-49.
12. It is the responsibility of the pilot in command to exercise reasonable and prudent judgement in the use of the advisory services of the optional AFIS.
13. Use of a Pseudo VORTAC type of waypoint is limited to operations where the navigation source has been selected to FMS only. If a Pseudo VORTAC problem is loaded with NAV 1 or NAV 2 as the navigation source, the MFD map will be incorrect.

NOTE

NAV autotuning is disabled in this installation.

LORAN-C

1. Navigation may not be predicated on LORAN-C when operating outside the approved LOA boundaries as shown in the GNS-X/ES operators manual, or when the LORAN-C sensor is in DR.

VLF/OMEGA

1. Navigation may not be predicated on VLF/OMEGA when the VLF/OMEGA Sensor is in DR.
2. The GNS-X/ES with only the VLF/OMEGA sensor operating is not approved for operation into valleys; eg. between peaks in mountainous terrain.

GPS

1. The Global Positioning System (GPS) sensor is approved as a contributing sensor for navigation provided:
 - a. The GPS sensor may not be the only sensor selected for use.
- AND
- b. It is receiving four or more satellites and the GDOP is six or less and the sensor is not using altitude.
- OR
- c. The system is receiving three or more satellites and the GDOP, using altitude, is ten or less.
 2. Manually entered altitude may be used only after failure of the automatic inputs and must be updated every 5 minutes.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

RNAV APPROACH

1. The system must be configured for autotuning or the VHF NAV must be manually tuned to the appropriate frequency to execute RNAV approaches.

NOTE

If autotune is selected, verify that it is automatically deselected when FMS approach mode is selected and the VHF NAV is tuned to the appropriate frequency.

2. The system is only approved for published RNAV approaches which are available in the data base.
3. LORAN-C and GPS overlay approaches are not approved.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X/ES operator's manual for either navigation or AFIS operation (reference limitations 1 and 2).

NOTE

When flying an FMS VNAV profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Lights - AS REQUIRED.
3. Avionic Power Switches - AC and ON.
4. AC Inverter Switch - CHECK INV 1 AND INV 2.
5. Battery Temperature - CHECK.
6. Passenger Advisory Lights - PASS SAFETY.
7. Pressurization - SET ALTITUDE AND RATE.
8. Antiskid - CHECK ON.
9. Avionics Cooling Fans - CHECK OPERATING.

NOTE

If the antiskid is turned off prior to or during taxing, it must be turned on prior to takeoff. The antiskid must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary. If the airplane is taxiing when the antiskid system is actuated, the antiskid test sequence will not be completed successfully and the antiskid will not be operational during takeoff.

10. Standby Gyro Switch - CHECK ON.
11. Electric Elevator Trim - CHECK and SET; (operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
12. Aileron and rudder trim - SET.
13. Autopilot - CHECK; engage, push pilots A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
14. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
15. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE.
16. ATIS, Clearance and Flight Management System - CHECK.
17. Flaps - CHECK and SET.

NOTE

Verify flap trim interconnect operation between 15 and 25 degrees.

18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test valve on pilot's and co-pilot's displays is 50 feet.

(Continued Next Page)

BEFORE TAXIING (Continued)

- b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Cockpit Voice Recorder (if installed) test button PUSH and verify operational.
- a. Erase Button - PUSH. Hold for 2-seconds.

PERFORMANCE

No Change.

DESCRIPTION

The Global GNS-X/ES is a comprehensive navigation management system which integrates multiple systems and sensors into an integrated whole, which is capable of precise navigation. The system takes information from various navigation sensors, considers the strengths, weaknesses and signal strengths of each sensor in use, and computes a most likely position for the airplane. It accomplishes these computations and advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter DR (dead reckoning) mode and so inform the pilot through a message on the control display unit (CDU).

The GNS-X/ES provides lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

A NAV 1/AUTOTUNE annunciator/switch located on the center instrument panel can be used to control autotuning of the VHF NAV by the GNS-X/ES. Pressing the switch alternately selects and deselects autotuning capability. If the AUTOTUNE light is illuminated in the switch, the FMS may autotune the NAV 1 if it needs it for navigation. If AUTOTUNE is extinguished, it cannot select NAV 1 for autotuning. If NAV 1 has been channeled manually, the GNS-X/ES will sense that and will not autotune it until the switch is pressed, giving it that capability. If NAV 1 is selected on the EFIS, it will also be prevented from autotuning it. NAV 2/AUTOTUNE is also provided in a similar manner.

The optional AFIS provides integrated flight planning and performance management to the GNS-X/ES with the following capabilities:

1. Access to ground based Global Data Center (GDC) computers from a portable terminal for the purpose of retrieving performance optimized preflight flight plans and current aviation weather;
2. Digital transfer of AFIS flight plan and weather data into the flight management system for display and performance monitoring on the GNS-X/ES CDU.
3. Air/ground computer link interfacing the GNS-X/ES FMS to the ground based Global Data Center computers for the purpose of providing enroute flight plan, weather and performance updates.

The optional AFIS equipment consists of:

1. DTU - Data Transfer Unit contains a 3.5 inch micro floppy disk drive mounted in the cockpit.
2. DMU - Data Management Unit computer formats the disk information and presents it to the GNS-X/ES FMC for display on the CDU. The DMU contains a VHF transceiver using an external VHF antenna to transmit and receive data from an appropriate ground station onto the Global Data Center while in flight.
3. GPC - Global Personal Computer and printer permits accessing the GDC via telephone modem and storing the information on the floppy disk.

BEFORE TAXIING (Continued)

- b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Verify Proper Operation of GNS-X/ES VPU (VORTAC Position Unit)
- a. Press the "TUNE" button on the CDU twice (NAV tune page "TUNE 2/3").
 - b. Verify that the "NAV 1 FREQ" and "NAV 2 FREQ" on the Tune page agree with the frequencies displayed on the respective Nav control heads on the instrument panel.
 - c. If "NAV 1 FREQ" or "NAV 2 FREQ" on the GNS-X/ES Tune page is displayed as dashes - "Recycle the power on the respective Nav control head to "OFF", leave it in off for approximately 10 seconds, then back "ON". This should cause the Nav frequency to be displayed on the Tune page.

Figure 1

17450-01C01-0002

NOTE

In the above example, power would have to be cycled on the NAV 1 control head but not on the NAV 2. Ignore all other dashed out fields except "FREQ".

20. Cockpit Voice Recorder (if installed) test button PUSH and verify operational.
- a. Erase Button - PUSH. Hold for 2-seconds.

PERFORMANCE

No Change.

DESCRIPTION

The Global GNS-X/ES is a comprehensive navigation management system which integrates multiple systems and sensors into an integrated whole, which is capable of precise navigation. The system takes information from various navigation sensors, considers the strengths, weaknesses and signal strengths of each sensor in use, and computes a most likely position for the airplane. It accomplishes these computations and advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter DR (dead reckoning) mode and so inform the pilot through a message on the control display unit (CDU).

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1. Access to ground based Global Data Center (GDC) computers from a portable terminal for the purpose of retrieving performance optimized preflight flight plans and current aviation weather;
2. Digital transfer of AFIS flight plan and weather data into the flight management system for display and performance monitoring on the GNS-X/ES CDU.
3. Air/ground computer link interfacing the GNS-X/ES FMS to the ground based Global Data Center computers for the purpose of providing enroute flight plan, weather and performance updates.

The optional AFIS equipment consists of:

1. DTU - Data Transfer Unit contains a 3.5 inch micro floppy disk drive mounted in the cockpit.
2. DMU - Data Management Unit computer formats the disk information and presents it to the GNS-X/ES FMC for display on the CDU. The DMU contains a VHF transceiver using an external VHF antenna to transmit and receive data from an appropriate ground station onto the Global Data Center while in flight.
3. GPC - Global Personal Computer and printer permits accessing the GDC via telephone modem and storing the information on the floppy disk.

FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 3

ALLIED SIGNAL MK VI GROUND PROXIMITY WARNING SYSTEM (GPWS)

APPROVED BY Carol Blacklock

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 27, 1994

27 MAY 1994

SUPPLEMENT 3

ALLIED SIGNAL MK VI GROUND PROXIMITY WARNING SYSTEM (GPWS)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	27 May 1994
Revision 1	29 September 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S3-1 thru S3-8	Revised	1	S3-AA
* S3-9 thru S3-10	Added	1	S3-AA

APPROVED BY



for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

9/29/95

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S3-AA	Airplanes Equipped With Optional Allied Signal MK VI Ground Proximity Warning System (GPWS)

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of airplane configuration codes. The code is located at the bottom of each page, and indicates effectivity by unit number. If no configuration code appears, the page is applicable for all units. This list contains only the configurations which have been incorporated into this basic FAA Approved Airplane Flight Manual.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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ALLIED SIGNAL MK VI GROUND PROXIMITY WARNING SYSTEM (GPWS)

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Allied Signal MK VI Ground Proximity Warning System (GPWS). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The Allied Signal Avionics Inc. MK VI Ground Proximity Warning System Pilot's Information Guide, P/N 060-4087, Revision A or later revision must be available to the flight crew when operating the Ground Proximity Warning System (GPWS).

The use of this system is limited to performing an advisory service only. The Allied Signal GPWS is not intended to be used as a primary flight instrument.

The MK VI GPWS may not provide warning for flight into precipitous terrain which has little or no preamble terrain.

Mode 6 altitude callouts are provided for stabilized descent in landing configuration when no ILS glideslope exists, glideslope information is not displayed on the pilot's flight instruments, or the aircraft has exceeded 2 dots deviation below the glideslope.

During radar vectoring by ATC, terrain clearance or descent rates may exceed minimum warning thresholds required by GPWS certification standards, possibly resulting in nuisance warnings or alerts.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

GROUND PROXIMITY WARNING

If a GPWS aural or visual warning is obtained in flight, immediately initiate corrective action to eliminate the cause for warning as follows:

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
1 and 2	"PULL UP"	Execute a positive pull up, apply MCT, and climb at the best possible angle until the warning ceases or terrain is cleared.

(Continued Next Page)

EMERGENCY PROCEDURES (Continued)

GROUND PROXIMITY WARNING

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
1	"SINK RATE"	Reduce rate of descent until the warning ceases.
2	"TERRAIN-TERRAIN"	Execute a positive pull up, apply MCT, and climb at the best possible angle until the warning ceases or terrain is cleared.
3	"DON'T SINK"	Establish a positive rate of climb.
4	"TOO LOW,..."	Fly out of the warning envelope (as defined by the Pilot's Information Guide) or reconfigure the aircraft by lowering gear and/or selecting landing flaps as appropriate.

NOTE

To avoid nuisance "TOO LOW, FLAPS" warning during training or other flights, the warning may be inhibited by pressing the GPWS FLAP OVRD switch, illuminating the amber ACTIVE annunciator.

ABNORMAL PROCEDURES

GROUND PROXIMITY ALERTS

If a GPWS aural or visual warning is obtained in flight, immediately initiate corrective action to eliminate the cause for warning as follows:

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
5	"GLIDESLOPE"	Maneuver aircraft to recapture glideslope. This warning may be cancelled by pressing the amber BELOW G/S switch, illuminating the amber G/S CANCELLED annunciator.

GPWS INOP ANNUNCIATOR ILLUMINATED

Indicates failure of the GPWS computer, loss of Air Data Computer (ADC) inputs, or loss of Radio Altimeter input to the Ground Proximity Warning System.

NORMAL PROCEDURES

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Lights - AS REQUIRED.
3. Avionic Power Switches - AC and ON.
4. AC Inverter Switch - CHECK INV 1 AND INV 2.
5. Battery Temperature - CHECK.
6. Passenger Advisory Lights - PASS SAFETY.
7. Pressurization - SET ALTITUDE AND RATE.
8. Antiskid - CHECK ON.
9. Avionics Cooling Fans - CHECK OPERATING.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on prior to takeoff. The antiskid must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary. If the airplane is taxiing when the antiskid system is actuated, the antiskid test sequence will not be completed successfully and the antiskid will not be operational during takeoff.

10. Standby Gyro Switch - CHECK ON.
11. Electric Elevator Trim - CHECK and SET; (operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
12. Aileron and Rudder Trim - SET.
13. Autopilot - CHECK; engage, push pilots A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
14. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
15. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE.
16. ATIS, Clearance and Flight Management System - CHECK.
17. Flaps - CHECK and SET.

NOTE

The flaps must be up to test the PULL UP portion of the GPWS. Only the glidescope portion will test if the flaps are not up.

18. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test valve on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
19. Cockpit Voice Recorder (if installed) test button - PUSH and verify operational.

(Continued Next Page)

BEFORE TAXIING (Continued)

20a. GPWS - Push green GPWS TEST switch and observe the following:

- Amber GPWS INOP, amber FLAP OVRD ACTIVE, and amber G/S CANCELLED annunciators illuminate immediately.
- Amber BELOW G/S annunciator illuminates after approximately 0.5 seconds. One "GLIDESLOPE" aural warning is produced.
- Red PULL UP annunciator illuminates after approximately 2 seconds and at least two "PULL UP" aural warnings are produced.

NOTE

- GPWS self-test is inhibited in flight.
- A minimum of 30 seconds should elapse between initiating successive MK VI GPWS self-tests to ensure proper computer initialization.

BEFORE LANDING

1. Landing Gear - DOWN and LOCKED.
2. Landing Lights - AS DESIRED.
3. Flaps - LAND.
4. Airspeed - V_{REF} .
5. Autopilot and Yaw Damper - OFF.
6. Annunciator Panel - CLEAR.
7. Pressurization - CHECK ZERO DIFFERENTIAL.
8. Speedbrakes - RETRACTED PRIOR TO 50 FEET.

NOTE

- The glideslope warning may be canceled by pressing either of the BELOW G/S warning lights after the airplane has descended below 1000 feet radio altitude on the glideslope. The mode will be rearmed anytime the airplane goes below 50 feet or above 1000 feet radio altitude on the glideslope.
 - Do not allow turbine speed RPM to be less than 52%.
9. Crew Briefing - COMPLETE.

(Continued Next Page)

ALTITUDE AND BANK ANGLE CALLOUTS (MODE 6)

Mode 6 provides callouts of predefined radio altitude (AGL) during descent for landing and aural warning of excessive bank angle during all phases of flight. No visual alerts are associated with Mode 6.

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
6	"FIVE HUNDRED"	This callout will occur on every approach at 500 ft AGL provided an ILS glideslope is not selected to the pilot's instruments or, if an ILS glideslope is selected and the aircraft is 2 dots deviation below glideslope.
6	"TWO HUNDRED"	This callout will occur on every approach at 200 ft AGL.
6	"MINIMUMS-MINIMUMS"	This callout will occur as the aircraft descends through the radio altitude selected by the pilot for decision height (DH) and is available only for DH's above 50 ft AGL. This advisory may be inhibited for VFR approaches by selecting decision height to zero.
6	"BANK ANGLE"	This callout advises of excessive bank angle and occurs at 50 degrees of bank above 210 ft AGL, reducing progressively to 15 degrees of bank at zero altitude. It is repeated every 3 seconds until bank angle is reduced below the warning threshold.

PERFORMANCE

No Change.

DESCRIPTION

The MK VI Ground Proximity Warning System provides a visual and aural warning of terrain proximity in the following modes:

1. Excessive rate-of-descent with respect to terrain (Mode 1).
2. Excessive closure rates to terrain (Mode 2).
3. Negative climb before acquiring a predetermined terrain clearance after takeoff or missed approach (Mode 3).
4. Insufficient terrain clearance based on airplane configuration (a flap override switch is provided to disable the flap configuration input to the system to prevent nuisance warnings when landing with less than full flaps) (Mode 4).

(Continued Next Page)

DESCRIPTION (Continued)

5. Inadvertent descent below the glideslope (Mode 5).
6. Inadvertent descent below minimum descent altitude (Mode 6).
7. Aural Altitude Callouts and Excessive Bank Angle Warning (Mode 6).

MK VI GPWS aural warning priority is indicated below. IMMEDIATE PILOT ACTION IS REQUIRED WHEN ANY OF THESE MESSAGES ARE RECEIVED IN FLIGHT.

MODE 1	"PULL UP" immediately repeated
MODE 2	"PULL UP" immediately repeated
MODE 2	"TERRAIN-TERRAIN" not repeated
MODE 2	"TERRAIN" repeated every 3 seconds
MODE 4	"TOO LOW, TERRAIN" repeated every 3 seconds
MODE 6	"MINIMUMS-MINIMUMS" one message per approach
MODE 6	"FIVE HUNDRED" one message per approach
MODE 4	"TWO LOW, GEAR" repeated every 3 seconds
MODE 4	"TWO LOW, FLAPS" repeated every 3 seconds
MODE 1 & 5	"GLIDESLOPE", "SINKRATE" repeated every 3 seconds
MODE 1	"SINKRATE" repeated every 3 seconds
MODE 3	"DON'T SINK" repeated every 3 seconds
MODE 5	"GLIDESLOPE" variable delay
MODE 6	"BANK ANGLE" repeated every 3 seconds
MODE 6	"TWO HUNDRED" one message per approach

FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation V *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 4 SUNDSTRAND COCKPIT VOICE RECORDER

APPROVED BY Carl B. Backlund

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 27, 1994

SUPPLEMENT 4

SUNDSTRAND COCKPIT VOICE RECORDER


Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	27 May 1994
Revision 1	23 March 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S4-1 thru S4-2	Revised	1	S4-AA
S4-3 thru S4-4	Original	0	S4-AA
* S4-5/S4-6	Revised	1	S4-AA

APPROVED BY 
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 3/23/95

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Unit Number</u>
S4-AA	Airplanes Equipped with Optional Sundstrand Cockpit Voice Recorder

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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SUNDSTRAND COCKPIT VOICE RECORDER

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Sundstrand Cockpit Voice Recorder. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No change.

OPERATING PROCEDURES

The Operating Procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

COCKPIT VOICE RECORDER FAILURE (RECORDER PWR FAIL LIGHT ILLUMINATED)

ADVISORY - Indicates that the cockpit voice recorder is inoperative.

PERFORMANCE

No change.

DESCRIPTION

The Sundstrand Cockpit Voice Recorder (CVR) system provides a continuous 30-minute record of all voice communications and aural warnings originating in the cockpit and aft PA audio.

The sensitive cockpit microphone is located in the overhead console. The system is energized when the battery switch is in the BATT position. The control panel contains a test switch for checking system operation. This check verifies that the recorder is operating properly. An erase button is provided for erasing the entire record. Erasure can only be accomplished on the ground.

FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation *V Ultra*

UNIT -0260 AND ON

SUPPLEMENT 5

FAIRCHILD COCKPIT VOICE RECORDER

APPROVED BY Carlos Blacklock

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 27, 1994

27 MAY 1994

SUPPLEMENT 5

FAIRCHILD COCKPIT VOICE RECORDER

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	27 May 1994

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S5-1 thru S5-6	Original	0	S5-AA

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S5-AA	Airplanes Equipped with Optional Fairchild Cockpit Voice Recorder

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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FAIRCHILD COCKPIT VOICE RECORDER

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Fairchild Cockpit Voice Recorder. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

NORMAL PROCEDURES

No Change.

DESCRIPTION

The Fairchild Cockpit Voice Recorder (CVR) system provides a continuous 30-minute record of all voice communications originating in the cockpit and aft PA audio.

The sensitive cockpit microphone may be located in any of the following locations: the overhead panel, adjacent to or in the glareshield fire tray or in the instrument panel. The system is energized when the battery switch is in the BATT position. The control panel contains a test switch for checking system operation. This check verifies that the recorder is operating properly. An erase button is provided for erasing the tape cycle. The button requires at least a 2-second depression to initiate the erasure cycle. Erasing the tape can only be accomplished on the ground.

FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation V *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 6

HIGH ALTITUDE TAKEOFF AND LANDING
(ABOVE 12,000 FEET PRESSURE ALTITUDE)

APPROVED BY *Don Baker*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL *8/8/94*

8 AUGUST 1994

SUPPLEMENT 6

HIGH ALTITUDE TAKEOFF AND LANDING (ABOVE 12,000 FEET PRESSURE ALTITUDE)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	8 August 1994

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S6-1 thru S6-7/S6-8	Original	0	S6-AA

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S6-AA	Airplanes Operating at High Altitude Airports (Above 12,000 Feet Pressure Altitude)

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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HIGH ALTITUDE TAKEOFF AND LANDING (ABOVE 12,000 FEET PRESSURE ALTITUDE)

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes using high altitude airports. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

NORMAL PROCEDURES

COCKPIT INSPECTION

1. Oxygen Masks - Checked and Properly stowed (Check mask at 100% and in EMER, Check mic).
2. Oxygen Control Valve - CREW ONLY.
3. Control Lock - OFF. (Ensure that the handle is fully in and controls and throttle are free).
4. Circuit Breakers - CHECK.
5. Generators - GEN (OFF if external power is to be used for start).
6. Boost Pumps - NORM.
7. Fuel Crossfeed - OFF.
8. LH/RH Gyro Slave - AUTO.
9. Windshield Bleed Air Valves - OFF.
10. Standby Gyro Switch - TEST momentary; Check Green Light ON.
11. Standby Gyro - ON; Check Amber Light ON.
12. Antiskid - ON.
13. Ground Idle Switch - NORM.
14. Engine Synchronizer - OFF.
15. Throttles - CHECK OFF.
16. Air Source Select - AS REQUIRED.
17. Air Conditioner - OFF.
18. Radar - OFF or STBY.

(Continued Next Page)

COCKPIT INSPECTION (Continued)

19. All Other Switches - OFF or NORM.

With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	Transponders 1 and 2	Warning Lights 1 and 2
NAV 1	LH and RH N ₁ Tachometers	Overhead Floodlights
DG 1	Standby Pitot and Static Heaters	Battery Temperature Gage
	Pilot's and Copilot's Audio Panels	Voltmeter

21. Battery Switch - BATT.
22. Battery Voltage - CHECK (24 volts minimum).
23. External Power - CONNECTED (if applicable).
24. Landing Gear Control - DOWN.
25. Landing Gear Lights - CHECK green lights illuminated and unlock light out.
26. Parking Brake - SET.
27. Avionics Power - ON.
28. Rotary Test Switch - WARNING SYSTEMS CHECKED.
29. Avionics Power - OFF.
30. Engine Instrument Warning Indicators - NO FLAGS.
31. Battery - OFF (If there is a delay before engine start, or ON with ground power unit).

AFTER TAKEOFF - CLIMB

1. Landing Gear - UP.
2. Landing Lights - OFF.
3. Flaps - UP.
4. Ignition - NORM.
5. Climb Power - SET.
6. Engine Synchronizer - AS REQUIRED.
7. Yaw Damper - AS REQUIRED.
8. Passenger Advisory Lights - AS REQUIRED.
9. Anti-Ice/Deice Systems - AS REQUIRED.
10. Recognition Lights - OFF.
11. Oxygen Control Valve - NORMAL (Cabin altitude lower than 12,000 feet).
12. Altimeters - SET to 29.92 (1013 mb) at transition altitude and CROSSCHECK.
13. Cockpit Temperature Select - VERIFY AUTO (above 31,000 feet).

BEFORE LANDING

1. Landing Gear - DOWN and LOCKED.
2. Landing Lights - AS DESIRED.
3. Flaps - LAND.
4. Airspeed - V_{REF} .
5. Autopilot and Yaw Damper - OFF.
6. Annunciator Panel - CLEAR.
7. Pressurization - CHECK ZERO DIFFERENTIAL.
8. Speedbrakes - RETRACTED PRIOR TO 50 FEET.

NOTE

Do not allow turbine speed RPM to be less than 52%.

9. Landing at Airports Above 12,000 Feet.
 - a. Oxygen Control Valve - CREW ONLY.
10. Crew Briefing - COMPLETE.

DESCRIPTION

The high altitude takeoff and landing supplement provides checklist procedures for landings and takeoffs at airports above 12,000 feet pressure altitude to avoid passenger oxygen masks from accidentally deploying.

FAA APPROVED

Airplane Flight Manual

MODEL 560

CitationV

Ultra

UNIT -0260 AND ON

SUPPLEMENT 7

HEADS UP TECHNOLOGIES CMS-400 AUDIO

CHECKLIST

(WITH OR WITHOUT PBS-250 CABIN BRIEFER)

APPROVED BY *EW Pittman*

EW Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 3/31/98

SUPPLEMENT 7

HEADS UP TECHNOLOGIES CMS-400 AUDIO CHECKLIST (WITH OR WITHOUT PBS-250 CABIN BRIEFER)

Use the Log of Effective Pages to determine the current status of this supplement. Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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Original	31 March 1998

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Page Number	Page Status	Revision Number	Configuration Code
S7-1 thru S7-5/S7-6	Original	0	S7-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Unit Number</u>
S7-AA	Airplanes 560-0260 and On equipped with Heads Up Technologies CMS-400 Audio Checklist (with or without PBS-250 Cabin Briefing)

HEADS UP TECHNOLOGIES CMS-400 AUDIO CHECKLIST (WITH OR WITHOUT PBS-250 CABIN BRIEFER)

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Heads Up Technologies CMS-400 Audio Checklist (with or without PBS-250 Cabin Briefer). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. The Heads Up Technologies CMS-400-4 users manual, dated July 14 1991 or later revision, must be available to the flight crew whenever the CMS-400 is being used as the operating checklist.
2. The Heads Up Technologies PBS-250-4 users manual, dated May 24 1993 or later revision, must be available to the flight crew whenever the PBS-250 is being used.
3. Audio checklist must contain FAA approved operating procedures. It is the operator's responsibility to ensure checklist contents are consistent with current airplane flight manual revisions.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

No Change.

PERFORMANCE

No Change.

FAA APPROVED

Airplane Flight Manual

MODEL 560 CitationV *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 8

SUNDSTRAND FLIGHT DATA RECORDER

APPROVED BY

for *Everett W. Pittman*

Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

8/8/94

8 AUGUST 1994

SUPPLEMENT 8

SUNDSTRAND FLIGHT DATA RECORDER

Use the Log of Effective Pages to determine the current status of this supplement.

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S8-1 thru S8-5/S8-6	Original	0	S8-AA

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S8-AA	Airplanes equipped with optional Sundstrand Flight Data Recorder

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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SUNDSTRAND FLIGHT DATA RECORDER

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Sundstrand Flight Data Recorder. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except:

ABNORMAL PROCEDURES

FLIGHT DATA RECORDER FAILURE (RECORDER PWR FAIL LIGHT ILLUMINATED)

ADVISORY - Indicates that the flight data recorder is inoperative.

DESCRIPTION

The Sundstrand Flight Data Recorder provides a permanent record of at least the airplane's altitude, airspeed, heading, vertical acceleration and microphone keying (Model FXUS). Other models provide additional parameters, which will vary with model and options. The data is recorded continuously in digital form onto a crash-survivable magnetic tape having sufficient capacity to store the last 25 hours of flight time.



Loss of power or other failure detected by the integrity monitoring function illuminates the RECORDER PWR FAIL light.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 10
BENDIX/KING CAS66A
TRAFFIC ALERT AND
COLLISION AVOIDANCE SYSTEM I (TCAS I)

APPROVED BY 
 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 6/21/94

21 JUNE 1994

SUPPLEMENT 10

BENDIX/KING CAS66A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM I (TCAS I)


Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	21 June 1994
Revision 1	20 October 1998

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S10-1 thru S10-2	Revised	1	S10-AA
S10-3 thru S10-7	Original	0	S10-AA
S10-8	Revised	1	S10-AA

APPROVED BY 
fa
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 10/20/98

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S10-AA

Airplanes Equipped with Optional Bendix/King
CAS66A Traffic Alert and Collision Avoidance
System I (TCAS I)

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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BENDIX/KING CAS66A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM I (TCAS I)

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Equipped with the optional Bendix/King CAS66A Traffic Alert And Collision Avoidance System I (TCAS I). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. The Bendix/King CAS66A TCAS I Pilot's Guide (Bendix/King part number 006-08746-0000 Revision 1 dated August 1993, or later revision), must be readily available to the flight crew when operating the CAS66A TCAS I system.
2. Pilots must not maneuver the aircraft solely based on the traffic display only. The traffic display is intended to assist in visually locating other air traffic. The traffic display lacks the resolution necessary for use in evasive maneuvering.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

TCAS FAILURE (AMBER “TCAS FAIL” ANNUNCIATOR ON TRAFFIC DISPLAY)

1. TCAS circuit breaker - CHECK IN.

IF TCAS FAIL LIGHT REMAINS ON

2. Altitude Encoder Source - SELECT OTHER SOURCE.
3. Transponder - OPERATE NORMALLY.

IF TCAS FAIL LIGHT REMAINS ON

4. TCAS Attitude, Heading and Radio Altitude Inputs - CHECK.

NORMAL PROCEDURES

1. Refer to the appropriate Bendix/King CAS66A TCAS I Pilot's Manual described in the Limitations Section.
2. TCAS I Operating Constraints:
 - a. The TA voice Message is inhibited below 400 feet AGL descending and 600 feet AGL climbing.
 - b. Airplanes on the ground are not displayed by TCAS.
3. Preflight Test - The self-test mode is activated by pushing the TST button on the TCAS I control panel. The aural annunciation “TCAS SYSTEM TEST OK” advises the minimum required equipment is available and operational. “TCAS SYSTEM TEST FAIL” is announced if the minimum required equipment complement is not available.

NOTE

The self-test will affect normal TCAS operation for up to twelve seconds, if initiated in flight.

4. Ground Operation

BEFORE TAKEOFF

- a. The TCAS I should not be selected to “TA” until just prior to takeoff.

AFTER LANDING

- a. The TCAS I should be selected to standby immediately after clearing runway.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

5. TCAS I Flight Procedures

a. TCAS Traffic Advisory

Using the information on MFD display, commence a visual search for the intruder. If and only if, the intruder is visually acquired, maneuver the airplane to maintain safe separation.

CAUTION

EVASIVE MANEUVERS BASED SOLELY ON TCAS TRAFFIC ADVISORIES, WITHOUT VISUAL ACQUISITION OF INTRUDER ARE NOT RECOMMENDED.

6. TCAS I range selection:

- A 10 NM (or lower) range may be selected for takeoff, low altitude climb, approach and landing, and below 10,000 feet.
- A 10 NM (or greater) range may be selected for high altitude cruise.
- The range selected has no effect on the TCAS I logic giving TA's .

7. TCAS Traffic Advisory Annunciations (TA):

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW POSITION</u>
"TRAFFIC, TRAFFIC"	Amber filled circle on the MFD.	Conduct visual search for the intruder. If successful, maintain visual acquisition to ensure safe operation.

- Pushing the FL button will display altitude reporting targets at barometrically corrected altitudes.

PERFORMANCE

No Change

DESCRIPTION

The TCAS I system is an on board collision avoidance and traffic display system with computer processing to identify and display potential and predicted collision targets. From the transponder replies, TCAS I determines relative altitude, range and bearing of any aircraft equipped with a mode C or S transponder. From this, TCAS I will determine the threat using standardized algorithms. Threat aircraft with mode A transponders will not provide altitude information; however, TCAS I will issue traffic advisories. The TCAS I will not detect aircraft without operating transponders.

(Continued Next Page)

DESCRIPTION (Continued)

The TCAS I is a single system installation consisting of one TCAS I processor, one top-mounted bearing antenna, one bottom mounted bearing antenna and traffic advisory displays on the MFD. Aural alerts are available through the headphones and individual pilot's and copilot's speakers. System control is through the CP66A control panel or discrete switch control panel. The TA display is informative only, displaying area traffic without attempting to provide any form of conflict resolution.

If traffic gets to within 15 to 30 seconds of a projected Closest Point Of Approach (CPA), and/or meets other range and closure criteria it is then considered a potential threat, and an aural and visual traffic advisory is issued. This level advisory calls attention to a potential collision threat using the traffic advisory display and voice message, "TRAFFIC TRAFFIC". It assists the pilot in achieving visual acquisition of the threat traffic.

TCAS I is intended as an aid to the see and avoid concept. Once an intruder is visually acquired, it is the pilot's responsibility to maneuver as necessary to maintain safe separation.

TCAS I does not incorporate the sophisticated sensors, bearing accuracy or track rate computations incorporated in TCAS II or TCAS III that are necessary for evasive maneuvering (rapid changes in pitch, roll, normal acceleration, thrust or speed). In general, TCAS I does not provide adequate information for pilots to determine reliably which horizontal or, in some cases, vertical direction to move to increase separation, and there is some likelihood that such maneuvers will actually result in reduced separation.

FAA APPROVED
Airplane Flight Manual

Citation V
Ultra

SUPPLEMENT 11
AUDIO CHECKLIST
(WITH OR WITHOUT CABIN BRIEFER)

APPROVED BY *EW Pittman*
For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL *8/15/94*

SUPPLEMENT 11

AUDIO CHECKLIST (WITH OR WITHOUT CABIN BRIEFER)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

Date

Original

15 August 1994

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S11-1 thru S11-6	Original	0	S11-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S11-AA

Airplanes equipped with Audio Checklist
(with or without cabin briefer)

AUDIO CHECKLIST (WITH OR WITHOUT CABIN BRIEFER)

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes equipped with Audio Checklist (with or without cabin briefers). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

GENERAL

1. Audio checklist must contain FAA approved operating procedures. It is the operator's responsibility to ensure checklist contents are consistent with current airplane Flight Manual revisions.

OPERATING PROCEDURES

No Change.

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

No Change

NORMAL PROCEDURES

No Change

PERFORMANCE

No Change



FAA APPROVED
Airplane Flight Manual

Citation V
Ultra

SUPPLEMENT 12

EROS OXYGEN MASK

Part Number 9914067-41

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 8/5/94

SUPPLEMENT 12

EROS OXYGEN MASK

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	5 August 1994

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S12-1 thru S12-7/S12-8	Original	0	S12-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S12-AA

Airplanes Equipped with Optional EROS
Oxygen Mask

EROS OXYGEN MASK

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional EROS Oxygen Mask. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. Prior to flight, the EROS oxygen mask must be checked and stowed properly in its receptacle to qualify as a quick donning oxygen mask.

NOTE

- Headsets, eyeglasses or hats worn by the crew may interfere with the quick donning capability of the oxygen mask.
 - Unless carefully trimmed, mustaches and/or beards worn by crew members may interfere with proper sealing of the oxygen mask. Mask fit and seal should be checked on the ground prior to flight.
2. Continuous use of the supplemental oxygen system above 25,000 feet cabin altitude, with passengers, or above 40,000 feet, crew only, is prohibited.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

BEFORE STARTING ENGINES

1. Preflight Inspection - COMPLETE.
2. Wheel Chocks - REMOVED.
3. Cabin Door - CLOSE and LOCK. Check green indicators for proper door pin position, handle vertical and in detent.
4. Passenger Briefing - COMPLETE.
5. Seats, Seat Belts, Shoulder Harnesses and Rudder Pedals - ADJUST and SECURE.
6. EROS Oxygen Mask - SET to 100% and CHECK. Check hose free.
7. Fuel Quantity - CHECKED.
8. Flashing Beacon Light - ON.
9. Air Conditioner - OFF.
10. Ground Idle Switch - NORM.

SHUTDOWN

1. Avionics Power Switches - OFF.
2. Defog Fan - OFF.
3. Air Conditioner - OFF.
4. Flaps - Takeoff and Approach.
5. Throttles - OFF after allowing ITT to stabilize at minimum value for one minute.
6. Passenger Advisory Lights - OFF.
7. Flashing Beacon Light - OFF.
8. Standby Gyro Switch - OFF.
9. Exterior Lights - OFF.
10. Control Lock - ENGAGE.
11. Parking Brake - SET or Wheels - CHOCK.

NOTE

- If brakes are very hot, do not set parking brake.
- Do not set parking brake if the anticipated cold soak temperature is -15°C (5°F) or below.

12. Battery Switch - OFF.
13. EROS Oxygen Mask - REMOVE from airplane if ground conditions of 0°C or colder are anticipated.
14. Engine Covers - INSTALL (after engines have cooled).

PERFORMANCE

No Change.

DESCRIPTION

EROS OXYGEN MASKS

The EROS oxygen mask is a quick donning mask with a built in microphone and regulator. The mask is a diluter/pressure demand type with 100% pressure demand oxygen provided by moving a LEVER on the underside of the mask to the 100% position. Pressure breathing is provided by rotating the TEST button to the EMER position. The crew member is assured that oxygen is being received when no restriction to breathing is present with the mask donned and 100% selected. Selecting EMER will provide a steady flow of pressurized oxygen to the face cone. To qualify as a quick donning mask, the mask must be properly stowed in the receptacle located behind and outboard of each crew member on the forward cabin divider and set to 100%.

At cabin altitudes above 20,000 feet, or when using the mask for smoke protection, 100% oxygen should be selected. To conserve oxygen when using the mask at cabin altitudes below 20,000 feet, 100% may be deselected to revert to normal diluter demand operation.

OXYGEN SUPPLY CHART

AVAILABLE TIME IN MINUTES							
CABIN ALTITUDE	² COCKPIT 0 CABIN	² COCKPIT 2 CABIN	² COCKPIT 4 CABIN	² COCKPIT 6 CABIN	² COCKPIT 8 CABIN	² COCKPIT 10 CABIN	² COCKPIT 11 CABIN
8000	544	137	78	55	42	34	31
10,000	625	143	80	56	43	35	32
15,000	625	145	82	57	44	36	33
20,000	491	139	81	57	44	36	33
25,000	262	113	72	53	42	34	32
30,000	359						
34,000	457						
35,000	485						
37,000	552						

NOTE

Cockpit masks are assumed to be at normal setting at 20,000 feet with a respiratory rate of 10 liters per minute - body temperature pressure saturated and at 100% setting above 20,000 feet.

Figure S12-1

FAA APPROVED
Airplane Flight Manual

Citation
Ultra

SUPPLEMENT 13

BFGoodrich WX-950/WX-1000+Stormscope

APPROVED BY *EW Pittman*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 10/7/94

4 OCTOBER 1994

SUPPLEMENT 13

BFGoodrich WX-950/WX-1000+ Stormscope

Use the Log of Effective Pages to determine the current status of this supplement. Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	4 October 1994
Revision 1	22 May 1997

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S13-1 thru S13-2	Revision	1	S13-AA
S13-3	Original	0	S13-AA
* S13-4 thru S13-6	Revision	1	S13-AA

APPROVED BY Carl Blackish

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL MAY 22, 1997

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S13-AA

Airplanes Equipped With BFGoodrich
WX-950 or WX-1000+Stormscope

BFGoodrich WX-950/WX-1000+Stormscope

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the optional BFGoodrich Series II WX-950 or WX-1000+ Stormscope with or without Synchro Heading option. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

GENERAL

1. If the Stormscope is equipped with an electronic checklist, it must contain FAA approved operating procedures. It is the operator's responsibility to ensure checklist contents are consistent with current Airplane Flight Manual Procedures.
2. The Stormscope optional Navaid presentation is not approved in conjunction with Primus 1000 Flight Guidance System.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

No Change

NORMAL PROCEDURES

No Change

PERFORMANCE

No Change

DESCRIPTION

The Stormscope Series II provides information to the flight crew regarding the presence of thunderstorm activity, allowing the pilot to make thunderstorm avoidance decisions. The system maps electrical discharge activity 360 degrees around the aircraft up to a distance of 200 nautical miles. In addition, the system can be connected to an external analog syncro heading source in order to maintain proper display orientation during turns.

Depending on the specific model or version, the Stormscope may incorporate electronic checklists and/or an electronic clock. The electronic checklists are not pilot programmable but can be field programmed to meet the pilot's specific requirements. Up to six checklists with thirty items per checklist are available. The electronic clock provides current time and date, elapsed time counter and a stopwatch for timed approaches.

The processor continuously provides storm data acquisition and self-test functions regardless of the display mode selected. Electrical discharge data is acquired continuously, even if the system is not in the weather mapping mode, to ensure the data presented to the pilot is always current.

Current status of the system may be determined by indicators on the display and on the processor. Faults detected by the system are logged in nonvolatile memory with a fault code and time tag. A message is displayed on the CRT indicating the error and any degradation of operating functions. The operator is prompted to press any button to resume operation. Any failure of the processor circuitry will be indicated on the processor's FAULT LED indicators as well as the CRT.

The following functions may or may not apply, depending on the particular installation:

1. Inhibit - Pressing the mic key inhibits processor data acquisition. If the system is inhibited for more than a minute, "MIC KEY STUCK" will be displayed.
2. Automatic Synchro Disable - The WX-950/WX-1000+Stormscope will automatically disable heading display and heading stabilization if the aircraft heading system fails. If this occurs, the following warnings will occur:

WX-950 - "FLG" will appear in the lower left of the weather displays.

WX-1000+ - The heading display at the top of the weather displays will show dashes (----).

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
Ultra

UNIT -0260 AND ON

SUPPLEMENT 14
AIRPLANES CERTIFIED TO DUTCH CONFIGURATION

This Airplane Flight Manual Supplement is approved by the FAA on behalf of the Netherlands RLD.

APPROVED BY *Tina L. Miller*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 1/30/95

SUPPLEMENT 14

AIRPLANES CERTIFIED TO DUTCH CONFIGURATION

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	30 January 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S14-1 thru S14-12	Original	0	S14-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this basic manual.

Configuration
Code

Effectivity by
Unit Number

S14-AA

Airplanes Certified to Dutch Configuration

AIRPLANES CERTIFIED TO DUTCH CONFIGURATION

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes modified to the Dutch Configuration. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

All operating limitations are the same as the FAA Approved Airplane Flight Manual except as follows:

1. Category II operations are not authorized.
2. High Altitude Maneuver Limits:
Department of Civil Aviation, The Netherlands (RLD) airworthiness requirements specify that adequate maneuvering capability must be available at all speeds and altitudes used in normal operation without encountering buffet onset. The limits for normal cruise are based on a 0.3g maneuver margin to initial buffet. Limiting cruise altitude is determined from the buffet onset chart at the airplane weight, and Mach number for a 1.3g load factor to buffet onset.

OPERATING PROCEDURES

The normal and emergency operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

EMERGENCY RESTART - ONE ENGINE (Refer to Figure 3-1 for Airstart Envelope)

FOLLOWING SHUTDOWN - WITH STARTER ASSIST

1. Throttle - OFF.
2. Generator - GEN.
3. Firewall Shutoff - CHECK OPEN.
4. Ignition - ON.
5. Start Button - PRESS momentarily.
6. Throttle - IDLE at 8% N_2 (Minimum).
8. Engine Instruments - MONITOR.
9. Start Button Light - OFF.
10. Ignition - NORM.
11. If start does not occur - PRESS STARTER DISENGAGE SWITCH.

(Continued Next Page)

EMERGENCY PROCEDURES (Continued)

ELECTRICAL FIRE OR SMOKE

- | |
|--|
| <ol style="list-style-type: none">1. Oxygen Masks - DON and 100% OXYGEN.2. Smoke Goggles - AS REQUIRED.3. Oxygen Microphone Switches - MIC OXY MASK. |
|--|
4. Pressurization Source Selector - NORMAL.

KNOWN SOURCE

5. Isolate faulty circuit - PULL Circuit Breaker(s).

UNKNOWN SOURCE

5. Flood Lights - FULL BRIGHT.
6. Battery Switch - EMER.
7. Generators - OFF - With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	Standby Pitot and Static Heaters
NAV 1	Pilot's and Copilot's Audio Panels
DG 1	Overhead Floodlights
LH and RH N ₁ Tachometers	Battery Temperature Gage
ADF 1	

The standby attitude indicator will continue to operate powered by its own emergency battery pack. This battery pack also provides 5 volt emergency instrument lighting. Make sure that the cabin services (refreshment center, cabin lights) are OFF.

CAUTION

WHEN LANDING WITH EMERGENCY POWER (BATTERY SWITCH-EMER AND BOTH GENERATORS OFF), THE FOLLOWING ARE NOT AVAILABLE:

THE LANDING GEAR NORMAL OPERATION IS NOT AVAILABLE: THE LANDING GEAR MUST BE LOWERED USING THE BLOW-DOWN SYSTEM AND THE LANDING GEAR WARNING LIGHTS WILL NOT ILLUMINATE.

THE FLAPS WILL NOT OPERATE. IF NOT PREVIOUSLY IN THE LANDING POSITION, A FLAP INOPERATIVE LANDING MUST BE MADE.

THE ANTISKID/POWER BRAKE SYSTEM IS INOPERATIVE; ONLY THE EMERGENCY BRAKE SYSTEM IS AVAILABLE.

THE ENGINE ANTI-ICE VALVES WILL BE OPEN. REFER TO ANTI- ICE ON THRUST CHARTS.

THE OUTSIDE AIR TEMPERATURE GAGE IS INOPERATIVE, SO USE CAUTION WHEN APPLYING POWER (EXCEPT FOR GO-AROUND WHERE GROUND TEMPERATURES CAN BE USED).

ALL ENGINE INSTRUMENTS EXCEPT THE N₁ INDICATOR WILL BE INOPERATIVE.

(Continued Next Page)

ELECTRICAL FIRE OR SMOKE (Continued)

8. Windshield Bleed Air Manual Valves - OFF.
9. DC Power RH Bus No. 1, 2 and 3 Circuit Breakers (Located on RH Panel) - PULL.
10. RH CB PANEL Circuit Breaker (Located on LH Panel) - PULL.
11. AC INVERTER No. 1 Circuit Breaker (Located on LH Panel) - PULL.
12. Land as soon as practical (Within 30 minutes).

IF SEVERITY OF SMOKE WARRANTS

12. Initiate Smoke Removal and/or Emergency Descent Procedures. Land as soon as possible.

WHEN LANDING ASSURED

13. LH Generator - GEN.
14. Landing Gear - DOWN.
15. Flaps - LAND.
16. Airspeed - V_{REF} .

IF SMOKE OR FIRE RESTARTS

17. LH Generator - OFF.
18. Landing - Plan for Brake Failure.

Advisory Antiskid systems will be inoperative. Power brakes will be available until accumulator discharges. Multiply landing distance by 1.3. Be prepared to use the emergency brake system.

ENVIRONMENTAL SYSTEM SMOKE OR ODOR

1. Oxygen Masks - DON and 100% OXYGEN.
2. Smoke Goggles - AS REQUIRED.
3. Oxygen Microphone Switches - AS REQUIRED.
4. Cabin (OVHD) Fan - OFF.
5. Defog Fan - OFF.
6. Pressurization Source Selector - Isolate Source by Selecting: LH.

NOTE

Pressurization source selector must remain in each position long enough to allow adequate system purging to determine the source of smoke.

IF SMOKE CONTINUES

7. Pressurization Source Selector - RH (Allow time for smoke to dissipate).

IF SMOKE STILL CONTINUES (AIR CYCLE MACHINE MAY BE LEAKING)

8. Pressurization Source Selector - EMER (Control cabin pressure with LH throttle).

SMOKE REMOVAL

NOTE

No action is normally required; however, if smoke is intense:

1. Oxygen Masks - DON and 100% OXYGEN.
2. Smoke Goggles - AS REQUIRED.
3. Oxygen Control Valve - MANUAL DROP.
4. Cockpit Divider Door - OPEN.
5. Passenger Oxygen - ENSURE passengers are receiving oxygen.
6. Oxygen Microphone Switches - MIC OXY MASK.
7. Passenger Advisory Light - PASS SAFETY.
8. Cabin Altitude Selector - SET to higher cabin altitude.
9. Emergency Dump Switch - DUMP (Cabin Altitude will not exceed approximately 14,000 feet).
10. Refer to USE OF SUPPLEMENTAL OXYGEN procedure in Abnormal Procedures.

IF SMOKE PERSISTS OR IT CANNOT BE VERIFIED THAT THERE IS NO FIRE

11. Land as soon as possible.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

COCKPIT INSPECTION

1. Oxygen Masks - Checked and Properly stowed (Check mask at 100% and in EMER, Check mic).
2. Smoke Goggles - AS REQUIRED.
3. Oxygen Control Valve - CHECK IN NORMAL.
4. Control Lock - OFF. (Ensure that the handle is fully in and controls and throttle are free).
5. Circuit Breakers - CHECK.
6. Generators - GEN (OFF if external power is to be used for start).
7. Boost Pumps - NORM.
8. Fuel Crossfeed - OFF.
9. LH/RH Gyro Slave - AUTO.
10. Windshield Bleed Air Valves - OFF.
11. Standby Gyro Switch - TEST momentary; Check Green Light ON.
12. Standby Gyro - ON; Check Amber Light ON.
13. Antiskid - ON.
14. Ground Idle Switch - NORM.
15. Engine Synchronizer - OFF.
16. Throttles - CHECK OFF.
17. Pressurization Source Select - AS REQUIRED.
18. Air Conditioner - OFF.
19. Radar - OFF or STBY.

(Continued Next Page)

COCKPIT INSPECTION (Continued)

20. All Other Switches - OFF or NORM.
21. Battery Switch - EMER (Check power to emergency bus items).

With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	Standby Pitot and Static Heaters
NAV 1	Pilot's and Copilot's Audio Panels
DG 1	Overhead Floodlights
LH and RH N ₁ Tachometers	Battery Temperature Gage
ADF 1	

22. Battery Switch - BATT.
23. Battery Voltage - CHECK (24 volts minimum).
24. External Power - CONNECTED (if applicable).
25. Landing Gear Control - DOWN.
26. Landing Gear Lights - CHECK green lights illuminated and unlock light out.
27. Parking Brake - SET.
28. Avionics Power - ON.
29. Rotary Test Switch - WARNING SYSTEMS CHECKED.

NOTE

The W/S TEMP annunciator may not test after cold soak at extremely cold temperatures. If this occurs, repeat the test after the cabin has warmed up. The test must be completed prior to flight.

30. Avionics and AC Power - OFF.
31. Engine Instrument Warning Indicators - NO FLAGS.
32. Battery - OFF (If there is a delay before engine start, or ON with ground power unit).

STARTING ENGINES**NOTE**

- Either engine may be started first.
 - If the aircraft has been cold soaked at temperatures below -12°C (10°F) and the engines have not been preheated, the use of external power or warming the battery to -12°C (10°F) or warmer is recommended. This temperature may be checked with the battery temperature gauge. Proper battery warmup may require extended application of heat to the battery.
1. Flood and Center Panel Lights - FULL BRIGHT (for night operation).
 2. Start Button - PRESS momentarily; button - LIGHTS.
 3. Throttles - IDLE at 8-10% N₂ (Minimum).

(Continued Next Page)

STARTING ENGINES (Continued)

4. ITT - CHECK for rise. Abort start if ITT rapidly approaches 720°C or shows no rise within 10 seconds.

NOTE

The temperature during ground start should not exceed 550°C. Temperatures exceeding this value should be investigated in accordance with the Engine Maintenance Manual.

5. Fan Speed - CHECK for indication of fan RPM with turbine RPM at 20% to 25%. Abort start if no fan RPM is shown by 25% turbine RPM.
6. Start Button Light - OFF between 30% and 44% turbine RPM.
7. Engine Instruments - CHECK NORMAL.
8. Fuel, Oil, Generator and Hydraulic Annunciators - EXTINGUISHED.
9. Ground Idle Switch - HIGH. Check high idle 52% turbine RPM.START.
10. Pressurization Source Selector - GND or NORM.

CAUTION

TURBINE SPEED GREATER THAN 53 PERCENT ON THE OPERATING ENGINE WILL PRODUCE A GENERATOR OUTPUT WHICH MAY DAMAGE THE GENERATOR DRIVE DURING THE SECOND ENGINE.

11. Other engine - START; repeat step 2 through 8.
12. Ground Idle Switch - NORM. Check both engines idle 46% turbine RPM.
13. External Power - CHECK CLEAR (if applicable).
14. Generators - GEN (if external power was used for start).

NOTE

When operating in visible moisture and ambient air temperature is between +10°C and -30°C, position ground idle switch to HIGH, turn pitot and static heat ON and engine LH and RH anti-ice systems ON. If temperature is above -18°C, turn W/S BLEED air switch to LOW. If temperature is -18°C or below, turn W/S bleed air switch to HI. Check W/S bleed air valves MAX. For sustained ground operation, the engines should be operated for one out of every four minutes at 65 percent turbine RPM or above.

ELECTRICAL SYSTEM

During a starter assisted engine start, the starter button is pressed, closing a start contactor. The starter button illuminates and the start cycle is initiated on the appropriate engine. At the completion of the start cycle the start contactor opens and the start button light is extinguished. Failure of the start button light to extinguish indicates that the start contactor has not opened.

PERFORMANCE

No change.

DESCRIPTION

No change.

FAA APPROVED
Airplane Flight Manual

Citation V
Ultra

SUPPLEMENT 15
GARMIN GPS 165
GLOBAL POSITIONING SYSTEM
(COUPLED)

APPROVED BY *EDM Baku*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 1/12/95

SUPPLEMENT 15

GARMIN GPS 165

GLOBAL POSITIONING SYSTEM (COUPLED)

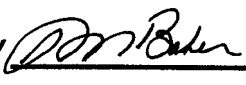
Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	12 January 1995
Revision 1	16 September 1996
Revision 2	10 February 1999

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S15-1 thru S15-4	Revised	2	S15-AA
S15-5	Revised	1	S15-AA
* S15-6	Revised	2	S15-AA
* S15-7 thru S15-8	Revised	2	S15-AB
* S15-7.1 thru S15-8.1	Added	2	S15-AC

APPROVED BY 
 Everett W. Pittman, Manager
 Aircraft Certification Office
 Federal Aviation Administration
 Wichita, Kansas

DATE OF APPROVAL 2/10/99

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-34-61	Navigation - P1000 Phase III Avionics System Software Change	560-0260 thru -0369 and -0371 thru -0400		

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
S15-AA	Airplanes equipped with Garmin GPS 165 Global Positioning System
S15-AB	Airplane 560-0370, -0398 and -0401 and On and Airplanes -0260 thru -0369 and -0371 thru -0397 and -0399 and -0400 incorporating SB560-34-61
S15-AC	Airplanes 560-0260 thru -0369 and -0371 thru -0397 and -0399 and -0400 not incorporating SB560-34-61

GARMIN GPS 165 GLOBAL POSITIONING SYSTEM (COUPLED)

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Garmin GPS 165 Global Positioning System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

The GPS 165 System consists of an antenna, and a receiver including its mounting rack. The primary function of the system is to acquire signals from the GPS system satellites, recover orbital data, make range and Doppler measurements, and process this information in real-time to obtain the user's position, velocity and time.

The Garmin GPS165 meets the accuracy specifications for VFR/IFR Enroute and Terminal Navigation operation within the U.S. National Airspace System in accordance with AC 20-138.

Navigation is accomplished using the WGS-84 (NAD-83) coordinate reference datum. Navigation data is based upon use of only the Global Positioning System operated by the United States of America.

OPERATING LIMITATIONS

GENERAL

1. The Garmin GPS165 navigation system, as installed on the Cessna Model 560, IS NOT APPROVED FOR USE DURING INSTRUMENT APPROACHES.
2. The GARMIN GPS165 Pilot's Guide, P/N 190-00066-00, Rev. A, dated March, 1994, or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the system.
3. The GPS165 must utilize software version 3.02 or later FAA approved revision. The software version is viewable on the GPS165 self test page which is displayed for approximately 5 seconds immediately after the unit is turned on.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.

(Continued Next page)

OPERATING LIMITATIONS (Continued)

5. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
6. If not previously defined, the following default settings must be made in the “SET” menu of the GPS165 prior to operation (refer to Pilot’s Guide for procedure if necessary).
 - a. NAV nm kt (sets navigation units to “nautical miles” and “knots”).
 - b. ALT ft fpm (sets altitude units to “feet” and “feet per minute”).
 - c. DATUM WGS-84 (sets map datum to WGS-84, see note below).
 - d. UNITS deg-min (sets navigation grid units to decimal minutes).

NOTE

In some areas outside the United States, datums other than WGS-84 or NAD-83 may be used. If the GPS165 is authorized for use by the appropriate airworthiness authority, the required geodetic datum must be set in the GPS165 prior to its use for navigation.

7. The following placard must be installed adjacent to the GPS-165:

GPS-165 APPROACHES NOT APPROVED

8. For operators equipped with an AlliedSignal/Global FMS, NAV radio autotuning will remain enabled (if selected) for FMS1 when FMS2 (GPS165) is the selected LRN source. This allows the optimum VPU position to be maintained by FMS1, even though FMS1 is not selected.
9. Joystick entry of external waypoints is disabled when FMS2 (GPS165) is the selected LRN source. If the joystick is inadvertently used, the cursor will appear, but a waypoint may not be entered. If the GPS165 sequence switch is in the hold mode, the cursor will initially appear at 0 longitude, 0 latitude. The cursor may be cleared by the RCL button on the MFD display controller.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

1. If GARMIN GPS165 navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM NOT AVAILABLE" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.
3. If external power to the GPS165 is lost, the system will automatically revert to its internal battery, and navigation will continue. A message will be presented to the pilot that the unit will turn off in XX seconds unless he presses any key to continue navigation (XX is a countdown from 30). When the GPS165 is operating on its internal battery, the display will automatically blank to conserve power after the time interval setup on the SETUP menu. Activating any control on the GPS165 automatically re-enables the display for the set timeout period.

NORMAL PROCEDURES

Normal operating procedures are described in the GARMIN GPS165 Pilot's Guide, P/N 190-00066-00, Rev. A, dated March, 1994, or later appropriate revision.

1. RAIM PREDICTION

RAIM availability at the destination may be predicted using the GPS165. To display predicted RAIM availability for the current destination, select "RAIM Prd?" from the NAV time menu. When the ENT key is depressed with the cursor on the "Calculate RAIM" prompt, the GPS165 calculates the predicted availability of RAIM at the displayed waypoint for a time interval of 15 minutes before, to 15 minutes after the displayed ETA. Actual availability of RAIM may vary depending upon satellite conditions existing upon arrival at the destination.

2. SYSTEM SWITCHES/ANNUNCIATORS

- a. DC-550 Display Controller "FMS" pushbutton: Toggles between FMS1 and FMS2 (GPS165) to select the FMS navigation source and display the chosen FMS navigation source data on the PFD HSI.
- b. MFD bezel pushbutton: Determines which FMS, FMS1 or FMS2 (GPS165), navigation data is displayed on the MFD.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

- c. GPS SEQ switch/annunciator (AUTO/HOLD): Depressing this switch disables automatic GPS waypoint sequencing and enables course entry from the coupled side HSI course select knob (pilot's or copilot's). The amber HOLD legend is illuminated. The course knob selection will control OBS input and the GPS165 will provide navigation guidance to the Flight Director relative to the selected course. When a course is selected, a course line relative to the next waypoint is drawn on the MFD when the GPS SEQ switch is returned to the AUTO mode. Once the AUTO mode is reactivated, the GPS165 will still provide guidance relative to the selected course, automatic waypoint sequencing (past current waypoint) is re-enabled, and the adjacent green AUTO legend is simultaneously illuminated.

NOTE

After the GPS165 sequence switch is placed in the hold mode, allow a short delay (approximately 1 second) before setting the desired OBS course.

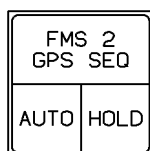


Figure S15-1

3. PFD/MFD DISPLAYS

- a. GPS165 system data can be selected as the navigation source on the pilot (or copilot's) PFD HSI by toggling the respective DC-550 Display Controller "FMS" button to FMS2 (GPS165). FMS2 annunciator will be displayed on the respective PFD.
- b. The DC-550 "BRG •" knob may be selected to "FMS" to display FMS1 bearing pointer information on the PFD HSI. In the same manner, aircraft equipped with a DC-550 Display Controller having a "BRG ♦" FMS bearing pointer selection may display FMS2 (GPS165) system data on the PFD HSI.
- c. GPS165 navigation data is also displayed on the MFD when the MFD bezel pushbutton is toggled to the FMS2 (GPS165) selection.

4. AUTOPILOT/FLIGHT DIRECTOR OPERATION

Coupling of the GPS165 System steering information to the autopilot/flight director can be accomplished by engaging the autopilot/flight director in the NAV mode by selecting FMS as the NAV source with the DC-550 Display Controller "FMS" button toggled to FMS2 (GPS165).

PERFORMANCE

No Change.

DESCRIPTION

See GPS165 Pilot's Guide for a complete description of the GPS165 system.

ABNORMAL PROCEDURES

1. If GARMIN GPS165 navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM NOT AVAILABLE" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.
3. If external power to the GPS165 is lost, the system will automatically revert to its internal battery, and navigation will continue. A message will be presented to the pilot that the unit will turn off in XX seconds unless he presses any key to continue navigation (XX is a countdown from 30). When the GPS165 is operating on its internal battery, the display will automatically blank to conserve power after the time interval setup on the SETUP menu. Activating any control on the GPS165 automatically re-enables the display for the set timeout period.

NORMAL PROCEDURES

Normal operating procedures are described in the GARMIN GPS165 Pilot's Guide, P/N 190-00066-00, Rev. A, dated March, 1994, or later appropriate revision.

1. RAIM PREDICTION

RAIM availability at the destination may be predicted using the GPS165. To display predicted RAIM availability for the current destination, select "RAIM Prd?" from the NAV time menu. When the ENT key is depressed with the cursor on the "Calculate RAIM" prompt, the GPS165 calculates the predicted availability of RAIM at the displayed waypoint for a time interval of 15 minutes before, to 15 minutes after the displayed ETA. Actual availability of RAIM may vary depending upon satellite conditions existing upon arrival at the destination.

2. SYSTEM SWITCHES/ANNUNCIATORS

An instrumentation cluster of two remote switches and annunciators used with the GPS165 system is located on the instrument panel in the pilot's primary field of view as illustrated below.

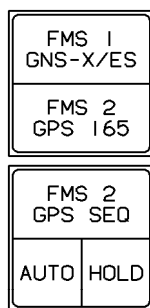


Figure S15-1

5618C1166

- a FMS1/FMS2 Switch - Determines which FMS provides navigation data to Primus 1000 system (Garmin GPS165 or GNS-X/ES). This controls both PFD and MFD displays.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

- b. GPS SEQ switch/annunciator (AUTO/HOLD) - Depressing this switch disables automatic GPS waypoint sequencing and enables course entry from the coupled side HSI course select knob (pilot's or copilot's). The amber HOLD legend is illuminated. The course knob selection will control OBS input and the GPS165 will provide navigation guidance to the Flight Director relative to the selected course.. When a course is selected, a course line relative to the next waypoint is drawn on the MFD when the GPS SEQ switch is returned to the AUTO mode. Once the AUTO mode is reactivated, the GPS165 will still provide guidance relative to the selected course, automatic waypoint sequencing (past current waypoint) is re-enabled, and the adjacent green AUTO legend is simultaneously illuminated.

NOTE

After the GPS165 sequence switch is placed in the hold mode, allow a short delay (approximately 1 second) before setting the desired OBS course.

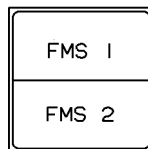


Figure S15-2

- c. FMS1/FMS2 Annunciator - Displays active FMS source as selected by the FMS1 (GNS-X/ES) or FMS2 (GPS165) switch, and are located in the immediate vicinity of each pilot's PFD.

3. PILOT'S DISPLAY

GPS165 system data is displayed on the pilot's or copilot's PFD when the FMS1/FMS2 switch is set to FMS2, and when their NAV source is selected to FMS on the respective display controller. GPS165 data is also displayed on the MFD when FMS2 is selected.

4. AUTOPILOT/FLIGHT DIRECTOR OPERATION

Coupling of the GPS165 System steering information to the autopilot/flight director can be accomplished by engaging the autopilot/flight director in the NAV mode with the FMS1/FMS2 switch set to FMS2, and selecting FMS as the NAV source of the coupled side.

PERFORMANCE

No Change.

DESCRIPTION

See GPS165 Pilot's Guide for a complete description of the GPS165 system.

FAA APPROVED
Airplane Flight Manual

Citation
Ultra

SUPPLEMENT 16
GARMIN GPS 165
GLOBAL POSITIONING SYSTEM
(STAND-ALONE)

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 1/12/95

12 JANUARY 1995

SUPPLEMENT 16

GARMIN GPS 165 GLOBAL POSITIONING SYSTEM (STAND-ALONE)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	12 January 1995
Revision 1	16 September 1996

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S16-1 thru S16-2	Revised	1	S15-AA
S16-3 thru S16-4	Original	0	S15-AA
* S16-5	Revised	1	S15-AA
S16-6 thru S16-8	Original	0	S15-AA

APPROVED BY 

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 9/16/96

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S16-AA

Airplanes equipped with Garmin GPS 165
Global Positioning System

GARMIN GPS 165 GLOBAL POSITIONING SYSTEM (STAND-ALONE)

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Garmin GPS 165 Global Positioning System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

The GPS 165 System consists of an antenna, and a receiver including its mounting rack. The primary function of the system is to acquire signals from the GPS system satellites, recover orbital data, make range and Doppler measurements, and process this information in real-time to obtain the user's position, velocity and time.

The Garmin GPS165 meets the accuracy specifications for VFR/IFR Enroute and Terminal Navigation operation within the U.S. National Airspace System in accordance with AC 20-138.

Navigation is accomplished using the WGS-84 (NAD-83) coordinate reference datum. Navigation data is based upon use of only the Global Positioning System operated by the United States of America.

OPERATING LIMITATIONS

GENERAL

1. The Garmin GPS165 navigation system, as installed on the Cessna Model 560, IS NOT APPROVED FOR USE DURING INSTRUMENT APPROACHES.
2. The GARMIN GPS165 Pilot's Guide, P/N 190-00066-00, Rev. A, dated March, 1994, or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the system.
3. The GPS165 must utilize software version 2.08 or later FAA approved revision. The software version is viewable on the GPS165 self test page which is displayed for approximately 5 seconds immediately after the unit is turned on.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.

(Continued Next page)

OPERATING LIMITATIONS (Continued)

5. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
6. If not previously defined, the following default settings must be made in the "SET" menu of the GPS165 prior to operation (refer to Pilot's Guide for procedure if necessary).
 - a. NAV nm kt (sets navigation units to "nautical miles" and "knots").
 - b. ALT ft fpm (sets altitude units to "feet" and "feet per minute").
 - c. DATUM WGS-84 (sets map datum to WGS-84, see note below).
 - d. UNITS deg-min (sets navigation grid units to decimal minutes).

NOTE

In some areas outside the United States, datums other than WGS-84 or NAD-83 may be used. If the GPS165 is authorized for use by the appropriate airworthiness authority, the required geodetic datum must be set in the GPS165 prior to its use for navigation.

7. The following placard must be installed adjacent to the GPS-165:

GPS-165 APPROACHES NOT APPROVED

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

1. If GARMIN GPS165 navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM NOT AVAILABLE" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.
3. If external power to the GPS165 is lost, the system will automatically revert to its internal battery, and navigation will continue. A message will be presented to the pilot that the unit will turn off in XX seconds unless he presses any key to continue navigation (XX is a countdown from 30). When the GPS165 is operating on its internal battery, the display will automatically blank to conserve power after the time interval setup on the SETUP menu. Activating any control on the GPS165 automatically re-enables the display for the set timeout period.

NORMAL PROCEDURES

Normal operating procedures are described in the GARMIN GPS165 Pilot's Guide, P/N 190-00066-00, Rev. A, dated March, 1994, or later appropriate revision.

1. RAIM PREDICTION

RAIM availability at the destination may be predicted using the GPS165. To display predicted RAIM availability for the current destination, select "RAIM Prd?" from the NAV time menu. When the ENT key is depressed with the cursor on the "Calculate RAIM" prompt, the GPS165 calculates the predicted availability of RAIM at the displayed waypoint for a time interval of 15 minutes before, to 15 minutes after the displayed ETA. Actual availability of RAIM may vary depending upon satellite conditions existing upon arrival at the destination.

2. SYSTEM SWITCHES/ANNUNCIATORS

An instrumentation cluster of four remote switches and annunciators used with the GPS165 system is located on the instrument panel in the pilot's primary field of view as illustrated below.

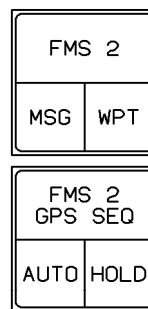


Figure S16-1

5618C1165

- a. GPS Message (GPS MSG annunciator) - When the GPS165 has a new message, the amber GPS MSG annunciator will flash. When this occurs, press the MSG key on the GPS165 to view the message. Continue to press the MSG key on the GPS165 until the page you were viewing prior to pressing the MSG key is displayed.
- b. GPS Waypoint (GPS WPT annunciator) - When the GPS165 detects that the aircraft is 15 seconds from the next programmed waypoint or turn anticipation point, the amber GPS WPT annunciator will flash. Upon passing the waypoint, the annunciator will automatically extinguish.

NORMAL PROCEDURES (Continued)

- c. GPS sequence (GPS SEQ annunciator and switch) - This two position (AUTO or HOLD) switch controls the sequence as the airplane passes a GPS waypoint. In the AUTO mode, the system will automatically sequence to the course of the next GPS waypoint. In the HOLD mode, a manual course may be entered from the OBS knob, and the waypoint is de-coupled from the remainder of the flight plan.

3. PILOT'S DISPLAY

The GPS165 System guidance information will appear on a dedicated navigation display unit mounted on the copilot's instrument panel. This will display GPS165 data only.

PERFORMANCE

No Change.

DESCRIPTION

See GPS165 Pilot's Guide for a complete description of the GPS165 system.

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

UNIT -0260 THRU -0538

SUPPLEMENT 17

GERMAN REGISTERED AIRPLANES

This Airplane Flight Manual Supplement is approved by the FAA on behalf of the German Luftfahrt-Bundesamt.

APPROVED BY *Don Baker*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 11/11/94

SUPPLEMENT 17

GERMAN REGISTERED AIRPLANES

Use the Log of Effective Pages to determine the current status of this supplement.


Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	11 November 1994
Revision 1	28 April 1995
Revision 2	16 January 1998
Revision 3	2 December 1998
Revision 4	1 March 2002

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S17-1 thru S17-4	Revised	4	S17-AA
S17-5 thru S17-6	Revised	3	S17-AA
S17-7/S17-8	Added	3	S17-AA
* S17-9/S17-10	Revised	4	S17-AA

APPROVED BY


Ron Rathgeber, Manager

Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

3/1/02

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S17-AA

Airplanes Certified to German Configuration.

GERMAN REGISTERED AIRPLANES

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual, certified to German configuration. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

HONEYWELL PRIMUS-1000 FLIGHT GUIDANCE SYSTEM

1. The Honeywell P-1000 Integrated Flight Control System Pilot's Manual for the Cessna Citation V must be immediately available to the flight crew.
2. Both flight director and autopilot coupled Category II approaches are not approved using the Honeywell P-1000 EFIS displays.
3. EFIS ground operation with the pilot's NOSE AVN FAN FAIL annunciator light illuminated is limited to 10 minutes or until either PFD HOT or MFD HOT annunciator light illuminates, whichever occurs first.
4. Dispatch is prohibited if either the PFD HOT, MFD HOT or IC HOT annunciator light is illuminated.
5. Dispatch is prohibited with the NOSE AVN FAN FAIL annunciator light illuminated.
6. Dispatch is prohibited following a flight where either a PFD HOT, MFD HOT or IC HOT annunciator light was illuminated, until the condition is identified and corrected.
7. The pilot's and copilot's PFD's must be installed and operational in the normal (non-reversionary) mode for takeoff.
8. The P-1000 system must be verified to be operational by a satisfactory preflight test as contained in the NORMAL procedures.
9. Dual PFD SG reversion to the MFD is prohibited.
10. Use of a Pseudo VORTAC type of waypoint is limited to operations where the navigation source has been selected to FMS only. If a Pseudo VORTAC problem is loaded with NAV 1 or NAV 2 as the navigation source, the MFD map will be incorrect.

OPERATING PROCEDURES

The Operating Procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING)

IF NEITHER GENERATOR COMES ON

After the step "Land as soon as practical (within 30 minutes)" add the following:

(Continued Next Page)

LOSS OF BOTH GENERATORS (LH AND RH GEN OFF LIGHTS AND MASTER WARNING) (Continued)

_.) EMER LTS - AS DESIRED.

NOTE

Emergency lights battery pack will be depleted in 10 minutes if lights remain on.

WHEN LANDING ASSURED

After the step "Battery Switch - BATT" add the following:

_.) EMER LTS - ON.

ABNORMAL PROCEDURES

PRIMARY FLIGHT DISPLAY OR MULTIFUNCTION DISPLAY FAN FAILURE (PFD FAN OR MFD FAN LIGHT ON)

IF GROUND OPERATING TIME EXCEEDS 10 MINUTES

Delete this procedure and Caution statement.

DISPLAY GUIDANCE COMPUTER COOLING FAN FAILURE (IC1 OR IC2 FAN LIGHT ON)

IF GROUND OPERATING TIME EXCEEDS 10 MINUTES

Delete this procedure and Caution statement.

NOSE AVIONIC FAN FAILURE (NOSE AVN FAN FAIL ANNUNCIATOR ILLUMINATED)

ON GROUND

Initiate the procedure with the following:

_.) Determine cause prior to flight.

NORMAL PROCEDURES

PRELIMINARY COCKPIT INSPECTION

After the step "Other External Lights and Passenger Advisory Lights - ON" add the following:

_.) EMER LTS - ON. (Check illumination - OFF).

(Continued Next Page)

NORMAL PROCEDURES (Continued)

BEFORE STARTING ENGINES

After the step "Fuel Quantity - CHECKED" add the following:

_.) EMER LTS - ARMED.

SHUTDOWN

After the step "Standby Gyro Switch - OFF" add the following:

_.) EMER LTS - OFF.

NOTE

Failure to turn the switch to OFF with the engines shut down will run down the emergency battery packs.

PERFORMANCE

No Change.

DESCRIPTION

For German certification of the Model 560 Ultra, the emergency electrical bus is modified to include the following equipment:

a) Transponder 1.

For German Certification of the Model 560 Ultra, an emergency light switch is added to the left pilot's panel which, when armed, will automatically turn on the emergency lights in the event of a dual generator failure. The switch has three positions: OFF-ON-ARMED. In the OFF position, there is no automatic turn on of the emergency lights, however the emergency lights can still be operated from the Passenger Safety switch, Door Courtesy switch and the 5G switch. In the ON position, the emergency lights will be on. The emergency lights which will be on are the two exit signs, the two overhead lights above the main cabin door and above the escape hatch and the four dropped aisle lights. In the ARMED position, the emergency lights will automatically illuminate if both generators are off line. The pilot must select OFF to turn the lights off when the engines are shut down. Next to the switch is a NOT ARMED amber light which will be on any time a generator is on line and the switch is not in the ARMED position (OFF or ON).

NOTE

Failure to turn the switch to OFF with the engines shut down will run down the emergency battery packs.

LOG OF LBA ACCEPTED SUPPLEMENTS

The following list contains LBA accepted supplements. Refer to Log of Approved Supplements in the basic FAA Approved Airplane Flight Manual for revision status.

SUPPLEMENT NUMBER	NAME	EQUIPMENT INSTALLED
2	Global GNS-X/ES Flight Management System	_____
5	Fairchild Cockpit Voice Recorder	_____
6	High Altitude Takeoff and Landing (Above 12,000 Feet Pressure Altitude)	_____
17	German Registered Airplanes	_____
27	German Registered Airplanes Certified for Steep Approaches and Short Field Landing Operations	_____
40	Reduced Vertical Separation Minimum	_____

FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation V *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 18

AIRPLANES CERTIFIED TO CANADIAN CONFIGURATION

This Airplane Flight Manual Supplement is approved by the FAA on behalf of
Transport Canada.

APPROVED BY *EW Pittman*
for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 12/2/94

2 DECEMBER 1994

SUPPLEMENT 18

AIRPLANES CERTIFIED TO CANADIAN CONFIGURATION

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	2 December 1994
Revision 1	23 February 1995

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* S18-1 thru S18-2	Revised	1	S18-AA
S18-3 thru S18-4	Original	0	S18-AA
* S18-5 thru S18-8	Revised	1	S18-AA
* S18-9 thru S18-14	Deleted	1	S18-AA

APPROVED BY



for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

2/23/95

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration <u>Code</u>	Effectivity by <u>Unit Number</u>
S18-AA	Airplanes Certified to Canadian Configuration.

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANES CERTIFIED TO CANADIAN CONFIGURATION

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual, for airplanes certified to Canadian configuration. The information contained herein supplements the information to the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

All operating limitations are the same as the FAA Approved Flight Manual except as follows:

MAXIMUM OCCUPANTS

13 (including 2 pilots). Configuration with more than nine (9) passengers is permitted if the aft baggage compartment at STA 348 is either deleted or its use is prohibited by an appropriate placard.

COLD SOAK

Operation of the aircraft has been demonstrated after prolonged exposure to ground ambient temperature of -30°C (-22°F). This was the minimum temperature achieved in cold weather testing, and is not considered limiting.

OPERATING PROCEDURES

All operating procedures are the same as the FAA Approved Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

No Change.

PERFORMANCE

All performance is the same as the FAA approved Flight Manual except as follows:

PROCEDURES FOR USE OF TAKEOFF PERFORMANCE TABLES

1. Determine gross weight of airplane for type of loading desired.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient (if applicable) and obstacles in the takeoff flight path.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum takeoff weight permitted by climb requirements (Figures 4-13 or 4-15). If takeoff is to be made with engine anti-ice On, refer to Figure 4-14 or 4-16. If this limitation restricts the gross weight, the pilot must off load weight until the requirement is met. If altitude is greater than 8000 feet, use 7° flaps. At or below an altitude of 8000 feet, 15° or 7° flaps may be used.
5. Using the takeoff weight determined in step 4, determine takeoff field length, V_1 , V_R , V_2 , V_{ENR} from Figure 4-18 (Flaps 7°) or Figure 4-20 (Flaps 15°).
6. For anti-ice ON or for runway gradients, V_1 and takeoff distance must be corrected using the correction table on page 4-17 or (Flaps 7°) or Figure 4-19 (Flaps 15°).
7. If the available runway length is less than the required field length, the airplane weight must be reduced until this requirement can be met.
8. If the obstacle clearance is a factor, the single-engine takeoff flight path charts (Figures 4-21, 4-23 and 4-24, 4-26) must be used to determine if the obstacle can be cleared. If the obstacle cannot be cleared, the gross weight must be reduced until the flight path assures obstacle clearance.

NOTE

During third segment acceleration if, after five (5) minutes, enroute climb speed (single-engine) has not been attained, hold attained airspeed, set power to maximum continuous thrust and begin final segment climb. The single-engine takeoff flight path distances of Figure 4-23 or 4-26 will be met.

9. Determine thrust settings for takeoff and enroute climb (single-engine) from Figures 4-9 and 4-10 respectively.
10. The first segment takeoff net climb and enroute net climb gradient tables, Figures 4-27, 4-28 and 4-31, are for advisory information only.

NOTE

- For inoperative antiskid system, multiply the takeoff field lengths obtained from Figures 4-18 and 4-20 by 1.25.
- For operations from runways with standing water or slush, refer to Section VII.

PROCEDURES FOR USE OF APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum landing weight permitted by climb requirements and the brake energy limits (Figure 4-31, if anti-ice systems are OFF; Figures 4-33 and 4-34, if anti-ice systems are ON). If residual ice is on the wing leading edge, apply the appropriate residual ice correction factors in accordance with Figure 4-32 to the maximum landing weight determined from Figures 4-33 and 4-34. If these limitations restrict the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing distance, V_{APP} and V_{REF} , from Figure 4-35, then apply the appropriate factors from the note below. If residual ice is on the wing leading edge, apply the residual ice correction factors in accordance with Figure 4-32. If the available runway length is less than the landing distance required, the airplane landing weight must be reduced.

NOTE

- Multiply the landing distance by 1.15 for -1 percent (downhill) runway gradient, and by 1.5 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing distance obtained from Figure 4-35.
 - For inoperative antiskid system, multiply the landing distance obtained from Figure 4-35 by 1.25.
6. If required by operational regulation, determine the landing field length from Figure S18-1.

NOTE

- The landing field length for destination and alternate airports is the landing distance divided by 0.6.
 - For wet conditions, the landing field length at the destination airport is 115% of the dry landing field length.
7. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 8. The approach climb and landing climb gradient tables (Figures 4-36 and 4-37) are for advisory information only.

NOTE

These procedures apply for normal landings at or below 15,200 pounds. Performance above 15,200 pounds is provided as additional information.

LANDING DISTANCE VS LANDING FIELD LENGTH

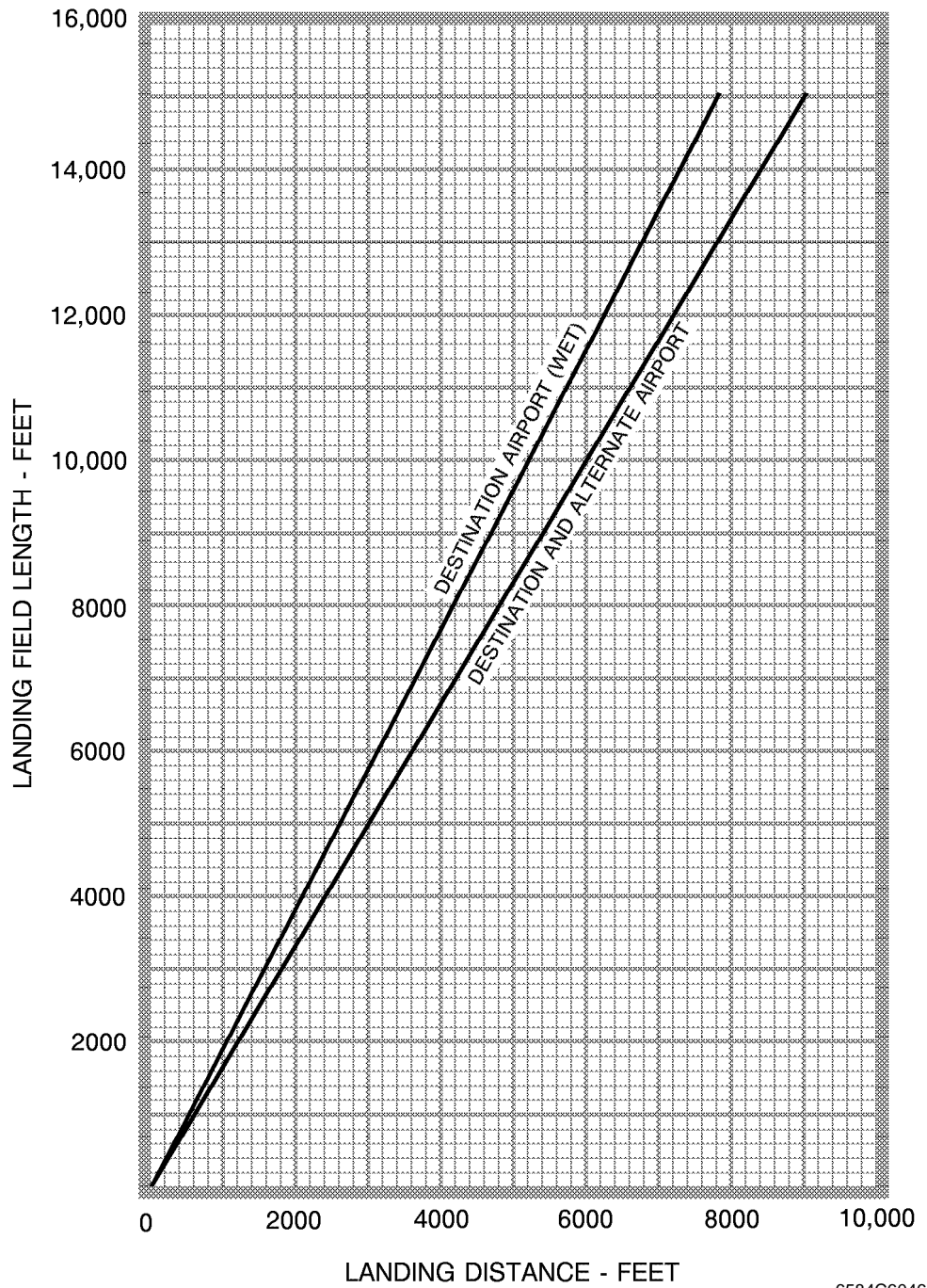


Figure S18-1

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 19

FAIRCHILD SOLID STATE COCKPIT VOICE RECORDER
MODEL A100S or A200S

APPROVED BY *R. L. A. Maldonado*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5/19/95

19 MAY 1995

SUPPLEMENT 19

FAIRCHILD SOLID STATE COCKPIT VOICE RECORDER MODEL A100S or A200S

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	19 May 1995
Revision 1	25 July 1995

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	S19-3	Original	0	S19-AA
*	S19-4 thru			
	S19-5/S19-6	Revised	1	S19-AA

APPROVED BY

Rolando A. Maldonado

for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

7/25/95

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

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Configuration
Code

Effectivity by
Unit Number

S19-AA

Airplanes Equipped with Optional Fairchild
Solid State Cockpit Voice Recorder Model
A100S or A200S

FAIRCHILD SOLID STATE COCKPIT VOICE RECORDER MODEL A100S or A200S

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Fairchild Solid State Cockpit Voice Recorder Model A100S or A200S. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

No Change.

PERFORMANCE

No Change.

DESCRIPTION

The Fairchild Solid State Cockpit Voice Recorder (CVR) system provides a continuous 30 minute record of all voice communications originating in the cockpit and aft PA audio, via 4 individually recorded channels. The Model A200S also provides a separate 2 hour continuous record which combines the 4 channels into a single data stream.

The sensitive cockpit microphone is located in the center of the glareshield fire tray. The system is energized when the battery switch is in the BATT position. The control panel contains a test switch which must be pressed for a minimum of 5 seconds to check system operation. Steady illumination of the test lamp verifies that the recorder is operating properly. An erase button is provided which requires at least a 2-second depression to initiate the bulk erasure cycle. The bulk erasure can only be accomplished on the ground.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 20

**FAIRCHILD F1000 SOLID STATE FLIGHT DATA
RECORDER**

APPROVED BY



for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

5/16/95

16 MAY 1995

SUPPLEMENT 20

FAIRCHILD F1000 SOLID STATE FLIGHT DATA RECORDER

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	16 May 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S20-1 thru S20-5/S20-6	Original	0	S20-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

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Configuration
Code

Effectivity by
Unit Number

S20-AA

Airplanes equipped with optional Fairchild
F1000 Solid State Flight Data Recorder

FAIRCHILD F1000 SOLID STATE FLIGHT DATA RECORDER

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes equipped with optional Fairchild F1000 Solid State Flight Data Recorder. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

FLIGHT DATA RECORDER FAILURE (FLT DATA RCDR FAIL LIGHT ILLUMINATED)

ADVISORY - Indicates that the flight data recorder is inoperative.

NORMAL PROCEDURES

No Change.

PERFORMANCE

No Change.

DESCRIPTION

The Fairchild F1000 Solid State Flight Data Recorder provides a permanent record of at least the airplane's altitude, airspeed, heading, vertical acceleration and microphone keying. Other models provide additional parameters, which will vary with model and options. The data is recorded continuously in digital form onto a crash-survivable solid state chip having sufficient capacity to store the last 25 hours of flight time.

Loss of power or other failure detected by the integrity monitoring function illuminates the FLT DATA RCDR FAIL light.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT 560-0260 THRU -0538

SUPPLEMENT 21

**DUAL GLOBAL GNS-X/ES FLIGHT MANAGEMENT
SYSTEM WITH C129 GPS**

UNITS 560-0292, -0294, -0297 AND -0300

APPROVED BY *Robert A. Maldonado*

FOR Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5/18/95

18 MAY 1995

SUPPLEMENT 21

DUAL GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM WITH C129 GPS

Use the Log of Effective Pages to determine the current status of this supplement.

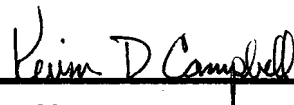
Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	18 May 1995
Revision 1	29 March 2000

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
* S21-1 thru S21-10	Revised	1	S21-AA
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APPROVED BY



for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

3/29/00

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S21-AA

Airplanes Equipped with Optional Dual Global
GNS-X/ES Flight Management System with
C129 GPS

DUAL GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM WITH C129 GPS

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Dual Global GNS-X/ES Flight Management System with TSO C129 Global Positioning System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The Global GNS-X/ES Flight Management System (FMS) with C129 GPS is approved under TSO C129 A1/B1/C1 and has been demonstrated capable of, and has been shown to meet, the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (Meets requirements of FAA Notice N8110.60 for primary navigation sensor).
2. North Atlantic Track (NAT) Minimum Navigational Performance Standards (MNPS) Airspace (as defined in AC 91-49 and AC 91-70) - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (Meets requirements of FAA Notice N8110.60 for primary navigation sensor).
3. Enroute and Terminal - In accordance with AC 20-130A, provided it is receiving usable navigation information from one or more of the following:
 - a. GPS.
 - b. One VOR/DME or multiple DMEs.
4. Non-Precision Approach - In accordance with AC 20-130A and AC 90-94 provided the FMS is receiving usable navigation information from the GPS sensor.

OPERATING LIMITATIONS

GENERAL

1. The GNS-X/ES Operator's Manual, Report Number 006-08883-0000, revision 0, dated Apr/97 or later appropriate revision, must be available to the flight crew whenever navigation is predicated on the use of the GNS-X/ES.
2. The GNS-X/ES must have unit P/N 17450-0406 installed and verified by the flight crew (17450-0406 displayed on the bottom left corner of the initialization page).
3. The GNS-X/ES must have the following software modification level installed and verified by the flight crew (displayed on the bottom right corner of the initialization page): SM02 only.
4. The Navigation Data Base (NDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Global-Wulfsberg Systems update disk or equivalent. Update disks will be received by mail (to subscribers) or obtained from authorized Global-Wulfsberg installation centers or update centers.
5. The fuel management mode - fuel flow, fuel performance, and fuel quantity - is for advisory purposes only and must be verified by the flight crew.
6. When operating outside the magnetic variation model area (north of 70 degrees North Latitude or south of 60 degrees South Latitude), the pilot must manually insert magnetic variation.

NAVIGATION

1. The GNS-X/ES is not approved as the sole means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME, etc.).
2. The GNS-X/ES (P/N 17450-0406) as installed, has been found to comply with the requirements for GPS primary means of navigation in oceanic and remote airspace, including MNPS, when used in conjunction with the FDE prediction program embedded in the GNS-X/ES, or external FDE prediction service provided or authorized by Global. This does not constitute operational approval.
3. Navigation within the national airspace system shall not be predicated upon the GNS-X/ES during periods of Dead Reckoning (DR). Following a period of DR, verify FMS position by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
5. The GNS-X/ES is approved for oceanic, enroute, and terminal operations.
6. During Oceanic, Enroute, and Terminal area operation with the FMS "MSG" annunciated on the EADI and with the "ACCURACY WARN" message displayed on the CDU, the flight crew must verify the FMS position using VOR/DME raw data or other appropriate means.
7. With the "POS WARN" (position warning) message active, the GNS-X/ES may not be used for RNAV operation. The GNS-X/ES position must be verified or updated using another means of navigation.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

8. The GNS-X/ES is approved for FMS "VFR" approaches as a VFR pilot aid only.
9. The use of manually inserted runway coordinates is limited to VFR operations only.
10. VNAV information displayed on the PFD is advisory information only. VNAV mode cannot be coupled to the autopilot or flight director.

NOTE

When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW02, etc), VNAV guidance may not be appropriate for straight-in approach operations.

11. The pilot's and copilot's altimeters are the primary altitude reference during all VNAV operations.

APPROACHES

1. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS navigation data base. The FMS data base must incorporate the current update cycle.
2. When using FMS guidance for conducting instrument approach procedures that do not include "or GPS" in the title of the published procedure, the flight crew must verify that the procedure specified navaid and associated avionics are operational.
3. When conducting GPS approaches, RAIM must be available at the Final Approach Fix.
4. "APP" (green) must be annunciated on the PFD at or prior to the FAF.
5. Approaches may be conducted using the HSI display on the PFD, or with the flight director coupled and/or the autopilot engaged.
6. Use of FMS guidance for conducting instrument approach procedures is prohibited when the amber FMS "MSG" annunciator is illuminated on the PFD, and when the "ACCURACY WARN" message is displayed on the CDU.
7. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches using the GNS-X/ES for guidance are prohibited.
8. The MFD map display may not be used for pictorial situational awareness when a DME arc procedure is the active nav leg. The MFD cannot display the curved geometry of DME arcs.
9. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
10. IFR non-precision approach approval is limited to published approaches within the US National Airspace System. Approach to airports in other airspace areas are not approved unless authorized by that appropriate airworthiness authority.
11. When conducting missed approach procedures, operation with the autopilot coupled is prohibited until the flight crew has established a rate of climb that ensures all altitude requirements of the procedure will be met.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER "MSG" ANNUNCIATOR ILLUMINATED

Refer to the appropriate revision of the GNS-X/ES Operator's Manual for information on FMS messages and actions required.

AMBER "INTG" ANNUNCIATION ON PFD

If GNS-X/ES GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

AMBER "MSG" ANNUNCIATOR ILLUMINATED ON THE PFD AND

1. "ACCURACY WARN" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. Verify FMS position by using VOR/DME information (enroute and terminal operations) or other sources as appropriate (oceanic).

NOTE

The "ACCURACY WARN" annunciator indicates the GPS integrity monitoring system has detected a GPS horizontal position error that is outside the alarm threshold for the phase of flight in progress. Except in the case of conducting an instrument approach procedure, the FMS may still be accurate and may be used for navigation provided the flight crew can confirm the position through other means, such as cross-checking the VOR/DME raw data.

- b. Discontinue use of FMS for approach guidance if conducting an instrument approach.
2. "DR" (DEAD RECKONING) DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. Do not predicate navigation on the FMS until the DEAD RECKONING message has extinguished. Following a period of DR, verify FMS position by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
3. "NO RAIM" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. If "NO RAIM" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.

(Continued Next Page)

ABNORMAL PROCEDURES (Continued)

4. "NO RAIM @ DEST" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. If "NO RAIM @ DEST" message is displayed, the GNS-X/ES has predicted that RAIM may not be available at the destination. The pilot should be prepared to use an alternate IFR approved navigation system or select an alternate airport if RAIM is not available upon arrival at the destination and an instrument approach is required.

"NO NAV" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE

The sensor has not navigated since system power-up. The MSG annunciator will not flash when this message is present.

CDU "TUNE" PAGE (With Honeywell Radio Management Units (RMUs) installed)

A situation may occur that prevents the crew from enabling autotuning and/or selecting a NAV frequency using the FMS CDU ("TUNE" page). Should this occur, manually cycle the frequency on the affected NAV receiver using the RMU. This will clear the lockup and allow the crew to tune the affected navigation radio using the FMS CDU, if desired.

NOTE

Manual tuning of NAV receiver frequencies using the RMU is not affected.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X/ES operator's manual for navigation operation (refer to Operating Limitations).

NOTE

When flying an FMS VNAV advisory profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

PERFORMANCE

No change.

DESCRIPTION

The Dual Global GNS-X/ES is a comprehensive flight management system which utilizes a GPS sensor as the primary means of computing precise position and navigational information. A VOR/DME sensor is also incorporated to provide data during degraded GPS operation or complete GPS sensor failure. The FMS advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter Dead Reckoning (DR) mode and so inform the pilot through a message on the FMS Control Display Unit (CDU).

The GNS-X/ES provides lateral steering information to the pilot through the flight director and Primary Flight Display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

Two annunciator/switches located on the center instrument panel, can be used to control autotuning of the VHF NAVs by the GNS-X/ES. The switches are labeled NAV 1 TUNE/NAV 1 AUTOTUNE and NAV 2 TUNE/NAV 2 AUTOTUNE. Pressing either switch alternately selects and deselects autotuning capability for that navigation receiver. If the AUTOTUNE light is illuminated in the switch, the FMS may autotune the receiver if it is required for navigation. If AUTOTUNE is extinguished, it cannot select that receiver for autotuning. If the navigation receiver has been selected manually, the GNS-X/ES will sense that and disable autotuning until the autotune switch is pressed again. If NAV 1 is selected on either Pilot's PFD, NAV 1 autotuning will be inhibited. NAV 2 autotuning is inhibited in a similar manner.

The GNS-X/ES is not designed to fly full SID or STAR procedures. When flying those portions of a SID or STAR that are not tracks between fixes (such as heading-to-intercept type procedures), the airplane should be flown in autopilot HDG mode or manually to ensure proper track and turn direction.

NOTE

The MFD map display may be incorrect for the procedures described above. The pilot should refer to the published SID or STAR procedure for correct navigation guidance.

(Continued Next Page)

DESCRIPTION (Continued)

When an approach has been loaded into the active flight plan and the aircraft is within 2.0 nm of the Final Approach Fix (FAF), the green APP annunciation in the PFD will flash for 10 seconds then illuminate steady, indicating that the approach mode is engaged.

Automatic leg sequencing will cease at the MAP. Missed approach procedures are to be executed as published. After executing the missed approach procedure and enroute to the missed approach holding fix, the fix can be automatically selected as the next waypoint by pressing the DIRECT TO button.

NOTE

When initially executing a missed approach procedure, use the autopilot HDG mode or manually fly the procedure to ensure proper track and turn direction.

FAA APPROVED
Airplane Flight Manual

Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 22
PRECISE FLIGHT - PULSELITE SYSTEM

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 12/4/95

SUPPLEMENT 22

PRECISE FLIGHT - PULSELITE SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

Date

Original

4 December 1995

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S22-1 thru S22-6	Original	0	S22-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S22-AA

Airplanes equipped with Precise Flight-
Pulselite System

PRECISE FLIGHT - PULSELITE SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with Precise Flight - Pulselite System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

UNCONTROLLED PULSE OPERATION (FAILED ON/OFF SWITCH) OR DISPATCHING WITH INOPERATIVE SYSTEM

Pulse Circuit Breaker (LH sub circuit Breaker Panel) - PULL.

NORMAL PROCEDURES

BEFORE LANDING

1. Landing Lights - OFF.
2. Recognition Lights - OFF.
3. Pulselite Switch - PUSH ON.

NOTE

- The landing and recognition lights must be OFF for the Pulselite System to operate.
- The pulsing of the landing and recognition lights are independent. Turning either system to ON position will cause the pulsing to stop.
- The landing lights must be turned ON at 300 feet AGL on landing approach.

PERFORMANCE

No Change

DESCRIPTION

The Precise Flight, Inc. Pulselite System provides pulsing of the landing and recognition lights. The system is activated by a switch annunciator on the instrument panel labeled PULSE LTG. The switch is an alternate action ON/OFF switch, with each position annunciated. When the PULSE LTG switch is on with the landing lights and recognition lights in the OFF position, the pulse sequence is active.

The ON position of the landing and recognition lights will override the Pulselite System. The Pulselite System is turned OFF by pressing the switch annunciator.

The Pulselite System is considered optional equipment and the airplane may be dispatched with the system turned OFF. In case of a system malfunction the circuit breaker may be pulled to deactivate the system for dispatch.

FAA APPROVED
Airplane Flight Manual

MODEL 560
CitationV
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 23

**ALLIEDSIGNAL GNS-X_{LS} WITH GPS FAULT
DETECTION AND EXCLUSION (FDE) (SINGLE OR
DUAL)**

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 12/1/95

SUPPLEMENT 23

ALLIEDSIGNAL GNS-X_{LS} WITH GPS FAULT DETECTION AND EXCLUSION (FDE) (SINGLE OR DUAL)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	1 December 1995
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LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S23-1 thru S23-2	Revised	3	S23-AA
S23-3	Original	0	S23-AA
S23-4	Revised	2	S23-AA
* S23-4 thru S23-11/S23-12	Revised	3	S23-AA

APPROVED BY



Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

2/18/99

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-34-51	Navigation - P-1000 Avionics System Software Improvement	560-0260 thru -0278 and -0280 thru -0289	0	<hr/>

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this basic manual.

Configuration
Code

Effectivity by
Serial Number

S23-AA

Airplanes 560-0279 and -0290 and on and
Airplanes -0260 thru -0278 and -0280 thru -0289
incorporating SB560-34-51 Equipped with
Optional AlliedSignal GNS-X_{LS} with GPS Fault
Detection and Exclusion (FDE) (Single or Dual)

ALLIEDSIGNAL GNS-X_{LS} WITH GPS FAULT DETECTION AND EXCLUSION (FDE) (SINGLE OR DUAL)

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes equipped with AlliedSignal GNS-X_{LS} (P/N 17960-0102-XXXX) with GPS Fault Detection and Exclusion (FDE) (Single or Dual). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATIONAL OPERATIONAL APPROVALS

NOTE

The following are general navigational operational approvals for the GNS-XLS Flight Management System. See OPERATING LIMITATIONS for limitations on specific software modification levels.

The GNS-XLS Flight Management System (FMS) is approved under TSO C129 A1/B1/C1 and has been demonstrated capable of, and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating, and receiving usable signals from two of the following navigation sensors (or one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (GNS-X_{LS} with FDE meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
2. North Atlantic (NAT) Minimum Navigation Performance Standards (MNPS) Airspace (as defined in AC91-49 and AC91-70) - Provided two FMSs are installed and operating, and are receiving usable signals from two of the following navigation sensors:
 - a. GPS (GNS-X_{LS} with FDE meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
3. Enroute and Terminal (including RNP5/BRNAV) - In accordance with AC20-130A and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from one or more of the following:
 - a. VOR-DME or multiple DMEs.
 - b. GPS.
4. Non-Precision Approach - In accordance with AC20-130A and AC90-94 provided the FMS is receiving usable navigation information from the GPS sensor. The GNS-X_{LS} with FDE has been demonstrated to meet the accuracy specifications for non-precision approach operations (GPS and Overlay, Loran C, VOR, VOR-DME, TACAN, NDB, NDB-DME, and RNAV).

OPERATING LIMITATIONS

■ GENERAL

1. The GNS-X_{LS} Operator's Manual, AlliedSignal Part Number 006-08845-0000, revision 2, dated January, 1996 or later appropriate revision, as applicable to the specific software modification status and sensor installation, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_{LS}.

NOTE

The GNS-X_{LS} Operator's manual is published by AlliedSignal and is generic to many airplane installations. All equipment, options and features in the GNS-X_{LS} Operator's Manual may not be available in the Citation Ultra.

2. Except oceanic, The GNS-X_{LS} is not approved as the primary means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME etc.).
3. The GNS-X_{LS}, as installed, has been found to comply with the requirements for GPS primary means of navigation in oceanic and remote airspace, including MNPS, when used in conjunction with the FDE prediction program embedded in the GNS-X_{LS}. This does not constitute operational approval.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
5. Navigation within the national airspace system shall not be predicated upon the GNS-X_{LS} during periods of dead reckoning (DR).
6. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the GPS equipment data base. The GPS equipment data base must incorporate the current update cycle.

NOTE

- Not all published approaches are in the FMS data base.
 - Instrument approaches must be conducted with the GNS-X_{LS} in the approach mode of operation and RAIM must be available at the Final Approach Fix.
-
- GNS-X_{LS} APPROACH mode (green APP) must be active and annunciated in the PFD at or prior to the FAF.
 - Use of FMS guidance for conducting instrument approaches is prohibited when the ACCURACY WARN sensor message is displayed on the CDU.

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OPERATING LIMITATIONS (Continued)

NOTE (Continued)

- When using FMS guidance for conducting instrument approach procedures that do not include “or GPS” in the title of the published procedure, the flight crew must verify that the procedure specified navaid and associated avionics are operational.
 - IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 - Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the GNS-XLS.
 - When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 - The GNS-XLS can only be used for approach guidance if the reference coordinate datum system for the instrument approach is WGS-84.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW19, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
7. The GNS-XLS is approved for FMS VFR approaches as a VFR pilot aid only. The use of manually inserted runway coordinates is limited to VFR operations only.
 8. When latitude/longitude, transferred from the navigation data base (NDB), is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
 9. The navigation data base (NDB) must be updated to the latest revision every 28 days; updating to be accomplished with the AlliedSignal PCMCIA card. Subscribers will receive PCMCIA cards by mail.
 10. When operating outside the magnetic variation model area (North of 70 degrees North latitude or South of 60 degrees South latitude), the pilot must manually insert magnetic variation.
 11. The fuel management mode is for advisory purposes only and does not replace the airplane primary fuel flow and fuel quantity systems. Airplane performance, endurance and range must not be predicated on use of GNS-XLS automatic TAS.
 12. The airplane must be properly maintained with respect to electrical bonding and static wicks.

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OPERATING LIMITATIONS (Continued)

13. In dual FMS installations, FMS 2 use for primary navigation is prohibited during single pilot operations if FMS 2 is installed in the right (copilot's) panel.

SOFTWARE MODIFICATION LEVEL 2 (SM02)

1. The GNS-X_{LS} Operator's Manual, Revision 2 dated January 1996 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_{LS}.
2. The software modification level must be verified to be SM02 as displayed on the GNS-X_{LS} initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the flight director and CDI displayed to ensure proper track and turn direction.

SOFTWARE MODIFICATION LEVEL 3 (SM03)

1. The GNS-X_{LS} Operator's Manual, Revision 3 dated September 1996 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_{LS}.
2. The software modification level must be verified to be SM03 as displayed on the GNS-X_{LS} initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the EHSI in FULL COMPASS mode.

SOFTWARE MODIFICATION LEVEL 4 (SM04)

1. The GNS-X_{LS} Operator's Manual, Revision 6 dated July 1998 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_{LS}.
2. The software modification level must be verified to be SM04 as displayed on the GNS-X_{LS} initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the EHSI in FULL COMPASS mode.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER MSG ANNUNCIATOR ILLUMINATED

1. Refer to the GNS-X_{LS} Operator's Manual for the appropriate actions to respond to annunciated messages.

AMBER INTG ANNUNCIATION IN PFD

1. If GNS-X_{LS} GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

NOTE

- If "NO RAIM" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.
- If "NO RAIM @DEST" message is displayed, the GNS-X_{LS} has predicted that RAIM may not be available at the destination. The pilot should be prepared to use an alternate IFR approved navigation system, or select an alternate airport, if RAIM is not available upon arrival at the destination and an instrument approach is required.

CDU "TUNE" PAGE WITH HONEYWELL RADIO MANAGEMENT UNITS (RMUS) INSTALLED

1. A situation may occur that prevents the crew from enabling autotuning and/or selecting a NAV frequency using the FMS CDU ("TUNE"). Should this occur, manually cycle the frequency on the affected navigation radio using the Radio Management Unit (RMU). This will clear the lockup and allow the crew to tune the affected navigation radio using the FMS CDU, if desired.

NOTE

Manual tuning of NAV receiver frequencies using the RMU is not affected.
Autotune selection using the panel mounted switches is not affected.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X_{LS} operator's manual for navigation operation (refer to Operating Limitations).

NOTE

When flying an FMS VNAV profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

PERFORMANCE

No Change.

DESCRIPTION

The AlliedSignal GNS-X_{LS} is a comprehensive flight management system which utilizes a GPS sensor as the primary means of computing precise position and navigational information. A VOR/DME sensor is also incorporated to provide data during degraded GPS operation or complete GPS sensor failure. The FMS advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter DR (dead reckoning) mode and will inform the pilot through a message on the control display unit (CDU).

The GNS-X_{LS} provides lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight provided the fuel and gross weight are updated prior to takeoff.

Two annunciator/switches, located on the center instrument panel, can be used to control autotuning of the VHF NAVs by the GNS-X_{LS}. They are labeled NAV 1 MAN TUNE/NAV 1 AUTOTUNE AND NAV 2 MAN TUNE/NAV 2 AUTOTUNE. Pressing either switch alternately selects and deselects autotuning capability of that receiver. If the AUTOTUNE light is illuminated in the switch, the FMS may autotune the receiver if it is required for navigation. If AUTOTUNE is extinguished, it cannot select NAV 1 for autotuning. If the navigation receiver has been selected manually, the GNS-X_{LS} will sense that selection, and disable autotuning until the autotune switch is pressed again. If NAV 1 is selected on either pilots' EHSI, NAV 1 autotuning will be inhibited. NAV 2 autotuning is inhibited in a similar manner.

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DESCRIPTION(Continued)

The GNS-X_{LS} is not designed to fly full SID or STAR procedures. When flying those portions of a SID or STAR that are not tracks between fixes (such as heading-to-intercept type procedures), the airplane should be flown in autopilot HDG mode, or manually, to ensure proper track and turn direction.

NOTE

The MFD map display may be incorrect for the procedures described above. The pilot should refer to the published SID or STAR procedure for correct navigation guidance.

The GNS-X_{LS} is approved for non-precision approach operations when the GPS sensor is operating and the limitations presented in this supplement are complied with.

The CDI sensitivity depicted by the GNS-X_{LS} changes with respect to the mode of operation (Enroute, Terminal, and Approach). When the airplane is within 30.0 nm of the destination airport, the GNS-X_{LS} switches from the enroute mode of operation to the terminal mode of operation. The CDI sensitivity on the PFD will change respectively from ± 5.0 nm to ± 1.0 nm for full scale deflection. When an approach has been loaded into the active flight plan and the airplane is within 2.0 nm of the final approach fix (FAF), the "GNS-X Approach" panel annunciator and the cyan "APP" annunciation in the PFD will illuminate, indicating that the approach mode is engaged. CDI scaling sensitivity will change respectively from ± 1.0 nm to ± 0.3 nm for full scale deflection.

NOTE

- With SM02 (Software Modification Level 2) and when a holding pattern or procedure turn is initiated, the inbound course is displayed for desired track on the PFD. Additionally, the course arrow will automatically slew to the inbound course. Flight Director steering commands will appear opposite until established inbound.
- With SM03 and SM04 (Software Modification Levels 3 and 4), and when a holding pattern or procedure turn is initiated, the course arrow and CDI needle refer to the current or next desired track.

Automatic leg sequencing will cease at the MAP. Missed approach procedures are to be executed as published. After executing the missed approach procedure and en route to the missed approach holding fix, the fix can be automatically selected as the next waypoint by pressing the DIRECT to button.

NOTE

When initially executing a missed approach procedure, use the autopilot HDG mode or manually fly the procedure to ensure proper track and turn direction.

FAA APPROVED

Airplane Flight Manual

Citation V *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 24

GRAVEL RUNWAY MODIFICATION

APPROVED BY 

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 4/30/96

30 APRIL 1996

SUPPLEMENT 24

GRAVEL RUNWAY MODIFICATION

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	30 April 1996

LOG OF EFFECTIVITY PAGES

Page	Page Status	Revision Number	Configuration Code
S24-1 thru S24-49/S24-50	Original	0	S24-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S24-AA

Airplanes Equipped with Optional Gravel
Runway Modification

GRAVEL RUNWAY MODIFICATION

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Gravel Runway Modification. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

GRAVEL RUNWAY REQUIREMENTS

1. The runway surface and subbase shall be compacted such that ruts will not be formed during normal operation of the airplane and shall have an average California Bearing Ratio (CBR) value of at least 25.
2. The runway surface should be smooth and free of ruts or troughs caused by water run-off. Grading should preclude the formation of pools of standing water.
3. The runway should be inspected at a frequency dictated by local conditions to ensure its adequacy for operational use.

LIMITATIONS

The limitations remain the same as those shown in the basic FAA Approved Airplane Flight Manual except:

1. The antiskid system must be operable and ON for takeoff and landing on gravel runways.
2. The nose wheel spin up system shall be operable and ON for landing on gravel runways.
3. The runway surface must be smooth, free of ruts and must have sufficient load bearing capability such that ruts will not be formed during normal operation of the airplane.
4. The load bearing capability of the runway and other airport surfaces that the airplane will be operated on must be adequate for the load rating of the Model 560 Citation V Ultra. The Transport Canada assigned load rating for the Model 560 Citation V Ultra is provided below. Where applicable, other national load ratings may be obtained from the appropriate agency of the respective country.

Transport Canada Aircraft Load Rating (ALR) - 3 (Applies to all airplane weights).

CAUTION

DAMAGE TO THE AIRPLANE STRUCTURE AND ENGINES MAY OCCUR WHEN OPERATIONS ARE CONDUCTED ON GRAVEL. THE PILOT MUST EXERCISE EXTREME CARE IN MAINTAINING PROPER APPROACH SPEEDS. HIGH SPEEDS DURING TOUCHDOWN MAY CAUSE GRAVEL DAMAGE FROM THE NOSE WHEEL.

(Continued Next Page)

LIMITATIONS (Continued)

5. Maximum Landing Gear Operating Speed - V_{LO} (Extending/Retracting) . 200 KIAS
6. Maximum Landing Gear Extended Speed - V_{LE} (Extended) 200 KIAS
7. Single Pilot operation per Exemption 4050G, or later revision, is prohibited when operating from gravel runways.
8. Nose wheel steering must be disengaged for takeoff and/or landing operations on gravel runways.
9. Thrust Reverser operations are prohibited on gravel runways.
10. Takeoffs and landings on gravel runways are prohibited for altitudes higher than 5000 feet.

OPERATING PROCEDURES

The normal, abnormal and emergency operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

NOTE

Single-engine training operations and/or touch and go landings should not be conducted when operating on gravel runways.

EMERGENCY PROCEDURES

ENGINE FAILURE DURING COUPLED APPROACH

- | |
|---|
| <ol style="list-style-type: none">1. Power (Operating Engine) - INCREASE as required.2. Autopilot and Yaw Damper - OFF.3. Airspeed - $V_{REF} + 10$ KIAS.4. Rudder Trim - TRIM toward operating engine as desired.5. Flaps - TAKEOFF AND APPROACH. |
|---|
6. Throttle (affected engine) - OFF.
 7. If Engine Fire, accomplish ENGINE FIRE procedure.
 8. Passenger Advisory Lights - PASS SAFETY.
 9. Passenger Seats - CHECK FULL UPRIGHT and OUTBOARD. FORWARD to clear exit doors.
 10. Seats, Seat Belts and Shoulder Harnesses - SECURE.
 11. Fuel Crossfeed - CHECK.
 12. Ignition (operating engine) - ON.
 13. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK) for gravel runway.
- ENGAGE (UNLOCK/PUSH/LOCK) for hard surface runway.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

14. Landing Gear - DOWN and LOCKED.
15. Antiskid - CHECK ON.
16. Windshield Bleed Air Switch - LO or HI for gravel runway - AS REQUIRED for hard surface runway.
17. Windshield Bleed Air Valves - OFF.

NOTE

When landing on gravel runway, the left windshield bleed air valve may be ON if rain removal or windshield anti-ice protection is required.

18. Nose Wheel Spin-up Control - ON at least 90 seconds prior to touchdown for gravel runway - OFF for hard surface runway.
19. Annunciator Panel - CHECK.
20. Flaps - LAND (when landing assured).
21. Airspeed - V_{REF} .

(Continued Next Page)

ENGINE FAILURE DURING COUPLED APPROACH (Continued)

22. Pressurization - CHECK ZERO DIFFERENTIAL.
23. Speed Brakes - RETRACTED PRIOR TO 50 FEET.

NOTE

Do not allow turbine speed RPM to be less than 52%.

24. N/W - RPM Light - GREEN (during approach through the flare) for gravel runway.

NOTE

After N/W - RPM Light illuminates green, the nose wheel spin-up control will have to be adjusted to keep the red overspeed light from illuminating.

ABNORMAL PROCEDURES

SINGLE-ENGINE APPROACH AND LANDING

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK and SET.
3. Radar Altimeter - SET.
4. V_{REF} and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
7. Flaps - TAKEOFF AND APPROACH.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM; unless ground icing anticipated - HIGH.
10. Fuel Crossfeed - CHECK.
11. Ignition (operating engine) - ON.
12. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK) for gravel runway.
- ENGAGE (UNLOCK/PUSH/LOCK) for hard surface runway.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

13. Landing Gear - DOWN and LOCKED.
14. Antiskid - CHECK ON.
15. Landing Lights - ON.
16. Windshield Bleed Air Switch - LO or HI for gravel runway - AS REQUIRED for hard surface runway.
17. Windshield Bleed Air Valves - OFF.

NOTE

When landing on gravel runway, the left windshield bleed air valve may be ON if rain removal or windshield anti-ice protection is required.

(Continued Next Page)

SINGLE-ENGINE APPROACH AND LANDING (Continued)

18. Nose Wheel Spin-up Control - ON at least 90 seconds prior to touchdown for gravel runway - OFF for hard surface runway.
19. Airspeed - $V_{REF} + 10$ KIAS Minimum.
20. Autopilot and Yaw Damper - OFF.
21. Pressurization - CHECK ZERO DIFFERENTIAL.
22. Speed Brakes - RETRACTED.
23. Flaps - LAND (when landing assured).
24. Airspeed - V_{REF} .

NOTE

Do not allow N_2 (turbine) RPM to be less than 52%.

25. N/W - RPM Light - GREEN (during approach through the flare) for gravel runway.

NOTE

After N/W - RPM Light illuminates green, the nose wheel spin-up control will have to be adjusted to keep the red overspeed light from illuminating.

SINGLE-ENGINE GO-AROUND

1. Throttle (operating engine) - T.O. POWER
2. Airplane Pitch Attitude - 10° (go-around mode on flight director for reference).
3. Flaps - TAKEOFF AND APPROACH.

NOTE

The landing gear warning horn cannot be silenced if the landing gear is retracted prior to the flaps reaching the T.O. & APPR position.

4. Climb Speed - $V_{REF} + 10$ KIAS minimum.
5. Landing Gear - UP (when positive rate-of-climb is established).
6. Flaps (when clear of obstacles) - Retract at 400 feet.
7. Windshield Bleed Air Switch - OFF.
8. Climb Speed - V_{ENR} .
9. Thrust - Maximum continuous power.
10. Nose Wheel Spin-Up Control - OFF.

FLAPS INOPERATIVE APPROACH AND LANDING (NOT IN LANDING POSITION)

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. V_{REF} and fan Speed Settings - CONFIRM.
3. Airspeed - Flaps 15° , $V_{REF} + 5$ KIAS.
Flaps 7° , $V_{REF} + 10$ KIAS.
Flaps 0° or unknown, $V_{REF} + 15$ KIAS.
4. Flap Control Circuit Breaker - CHECK IN.

(Continued Next Page)

FLAPS INOPERATIVE APPROACH AND LANDING (NOT IN LANDING POSITION) (Continued)

5. Multiply the landing distance of Figure 4-35, corrected for gravel surface, by 1.2.
6. Avionics and Flight Instruments - CHECK and set.
7. Radar Altimeter - SET.
8. Passenger Advisory Lights - PASS SAFETY.
9. Passenger seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
10. Engine Synchronizer - OFF.
11. Fuel Crossfeed - OFF.
12. Ignition - ON.
13. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK) for gravel runway.
- ENGAGE (UNLOCK/PUSH/LOCK) for hard surface runway.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

14. Landing Gear - DOWN and LOCKED.
15. Antiskid - CHECK ON.
16. Landing Lights - ON.
17. Windshield Bleed Air Switch - LO or HI for gravel runway - AS REQUIRED for hard surface runway.
18. Windshield Bleed Air Valves - OFF.

NOTE

When landing on gravel runway, the left windshield bleed air valve may be ON if rain removal or windshield anti-ice protection is required.

19. Nose Wheel Spin-up Control - ON at least 90 seconds prior to touchdown for gravel runway - OFF for hard surface runway.
20. Autopilot and Yaw Damper - OFF.
21. Annunciator Panel - CLEAR.
22. Pressurization - CHECK ZERO DIFFERENTIAL.
23. Speed Brakes - RETRACTED PRIOR TO 50 FEET.

NOTE

Do not allow turbine RPM to be less than 52%.

24. N/W - RPM Light - GREEN (during approach through the flare) for gravel runway.

NOTE

After N/W - RPM Light illuminates green, the nose wheel spin-up control will have to be adjusted to keep the red overspeed light from illuminating.

NOSE WHEEL STEERING WILL NOT DISENGAGE

1. Rudder Pedals - POSITION TO NEUTRAL
2. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK).

NOTE

May require slight rudder pedal movement before pin disengages. The nose wheel steering may disengage easier when the landing gear is retracted due to absence of air loads on the nose wheel. Attempt to disengage nose wheel steering with landing gear retracted or extended.

3. If unable to disengage - LAND ON HARD SURFACE RUNWAY.

NOTE

If landing on hard surface runway is not possible, ensure that the rudder is centered at touchdown and minimize nose wheel steering during rollout at high speed.

NOSE WHEEL STEERING WILL NOT ENGAGE

1. Rudder Pedals - POSITION TO NEUTRAL
2. Nose Wheel Steering
(GRAVEL) Handle - ENGAGE (UNLOCK/PUSH/LOCK).

NOTE

May require slight rudder pedal movement before pin engages.

3. If unable to engage - USE BRAKES TO STEER DURING LANDING AND TAXIING.

NOTE

Low speed taxiing with the nose wheel steering disengaged in deep gravel, particularly when turning, may result in the nose wheel turning to one side with no means to straighten it.

NOSE WHEEL STEERING (GRAVEL) HANDLE JAMMED (NOT FULLY ENGAGED OR DISENGAGED)

1. Nose Wheel Steering (GRAVEL) Handle - ENGAGE (UNLOCK/PUSH/LOCK) or DISENGAGE (UNLOCK/PULL/LOCK)

NOTE

May require slight rudder pedal movement before pin disengages. The nose wheel steering may disengage easier when the landing gear is retracted due to absence of air loads on the nose wheel. Attempt to engage or disengage nose wheel steering with landing gear retracted or extended.

2. If unable to engage or disengage completely - LAND ON HARD SURFACE RUNWAY.

NOTE

If landing on hard surface runway is not possible, ensure that the rudder is centered at touchdown and minimize nose wheel steering during rollout at high speed.

Depending on the amount of nose wheel steering pin engagement, full rudder travel and nose wheel steering may not be available. Apply rudder during final approach to evaluate the amount of sideslip available prior to touchdown in crosswinds. Maximum demonstrated crosswinds is 16 knots with the rudder pedals jammed in the nearly no travel condition.

3. If unable to engage - USE BRAKES TO STEER DURING LANDING AND TAXIING.

NOTE

Low speed taxiing with the nose wheel steering disengaged in deep gravel, particularly when turning, may result in the nose wheel turning to one side with no means to straighten it.

NORMAL PROCEDURES

EXTERIOR INSPECTION

1. General, in addition to basic airplane checklist.
 - a. Antennas, Flap Protectors and Antenna Protectors - CONDITION and SECURE.
 - b. Nose Wheel Turbine and Cover - CONDITION and SECURE.

COCKPIT INSPECTION

1. Oxygen Masks - Checked and Properly stowed. Check masks at 100% and in EMER. Check microphones.
2. Oxygen Control Valve - CHECK IN NORMAL.
3. Control Lock - OFF. Ensure that the handle is fully in and controls and throttles are free.
4. Circuit Breakers - CHECK.
5. Generators - GEN (OFF, if external power is to be used for start).
6. Ignition - NORM
7. Boost Pumps - NORM.
8. Fuel Crossfeed - OFF.
9. LH/RH Gyro Slave - AUTO.
12. Standby Gyro Switch - TEST momentary; Check Green Light ON.
13. Standby Gyro - ON; CHECK Amber Light ON.
14. Nose Wheel Steering (GRAVEL) - DISENGAGE (UNLOCK/PULL/LOCK) CHECK RUDDER PEDAL TRAVEL if gravel runway operation is anticipated; then ENGAGE (UNLOCK/PUSH/LOCK) CHECK RUDDER PEDAL TRAVEL.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

15. Antiskid - ON.
16. Ground Idle Switch - NORM.
17. Engine Synchronizer - OFF.
18. Throttles - CHECK OFF.
19. Pressurization Source Select - AS REQUIRED.
20. Windshield Bleed Air Valves - OFF.
21. Nose Wheel Spin-Up Control - OFF.
22. Air Conditioner - OFF.
23. Radar - OFF or STBY.
24. All Other Switches - OFF or NORM.

(Continued Next Page)

COCKPIT INSPECTION (Continued)

25. Battery Switch - EMER. CHECK POWER TO EMERGENCY BUS ITEMS.

NOTE

With the battery switch in EMER and the generators OFF, a properly charged battery will supply power for approximately 30 minutes to the following equipment:

COMM 1	LH and RH N1 Tachometer	Overhead Floodlights
NAV 1	Standby Pitot and Static Heaters	Standby Altitude/Airspeed
DG 1	Pilot's and Copilot's Audio Panels	Indicator Vibrator

26. Battery Switch - BATT.
27. Battery Voltage - CHECK (24 volts minimum).
28. External Power - CONNECTED (if applicable).
29. Landing Gear Control - DOWN.
30. Landing Gear Lights - CHECK green lights illuminated and unlock light out.
31. Parking Brake - SET.
32. Avionics Power Switch(es)- ON (and AC, if applicable).
33. Rotary Test Switch - WARNING SYSTEMS CHECKED.

NOTE

The W/S TEMP annunciator may not test after cold soak at extremely cold temperatures. If this occurs, repeat the test after the cabin has warmed up. The test must be completed prior to flight.

34. Avionics Power Switch(es) - OFF.
35. Engine Instrument Warning Indicators - NO FLAGS.
36. Battery - OFF if there is a delay before engine start, or ON with external power.

QUICK TURN AROUND

1. Control Lock - OFF.
2. Generators - GEN (OFF if external power is used).
3. Boost Pumps - NORM.
4. Standby Gyro - ON/CHECK AMBER.
5. Windshield Bleed Air Valves - OFF.
6. Throttles - CHECK OFF.
7. Nose Wheel Spin-Up Control - OFF.
8. All Other Switches - OFF OR NORM.
9. Battery Switch - BATT.
10. Battery Voltage - CHECK (24 volts minimum).
11. External Power - CONNECTED (if applicable).
12. Landing Gear Control - DOWN.
13. Landing Gear Lights - CHECK.
14. Parking Brake - SET.
15. Engine Instrument Warning Indicators - NO FLAGS.
16. Standby Gyro Caging Knob - UNCAGED and NO FLAG.

BEFORE TAXIING

1. Air Conditioner, Fans, Temperature Control - AS REQUIRED.
2. Avionics Power Switch(es)- ON (and AC, if applicable).

NOTE

The avionics will require warmup after cold soak. Over 20 minutes may be required at temperatures below -30°C (-22°F). Proper warmup is indicated by normal illumination of frequency/code displays with pilot control of brightness and by audio reception on all applicable avionics. In the absence of a suitable station, background static is an acceptable demonstration of reception.

3. DC Amps/Volts - CHECK.
4. Battery Temperature - CHECK.
5. Passenger Advisory Lights - PASS SAFETY.
6. Pressurization - SET ALTITUDE AND RATE.
7. Antiskid - CHECK ON.

NOTE

If the antiskid is turned off prior to or during taxiing, it must be turned on and the self-test sequence completed (antiskid annunciator light out) while the airplane is stationary prior to takeoff. If the airplane is taxiing when the antiskid system is actuated, the antiskid test sequence will not be completed successfully and the antiskid will not be operational during takeoff. Additionally, power braking will be inoperative for up to 6 seconds during the antiskid self-test.

8. Avionics Cooling Fans - CHECK OPERATING.
9. Nose Wheel Steering
(GRAVEL) Handle - ENGAGE (UNLOCK/PUSH/LOCK).

NOTE

May require slight rudder pedal movement before pin engages.

10. Standby Gyro Caging Knob - UNCAGED/NO FLAG.
11. Electric Elevator Trim - CHECK and SET; (Operate electric elevator trim nose up and push AP/TRIM DISC switch. Verify elevator trim wheel stops rotating. Trim should not operate while pressing only one side of the split switch. Repeat check for nose down trim. Repeat trim check for copilot's AP/TRIM DISC switch). Set the trim as required for center-of-gravity.
12. Aileron and rudder trim - SET.
13. Autopilot - (at pilot's discretion) CHECK; engage, push pilots A/P disconnect switch, verify A/P disconnect switch, verify A/P disconnects and disconnect chime sounds. Repeat on copilot's side.
14. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD and POSITIONED AFT or FORWARD to clear exit doors.
15. Seats, Seat Belts and Shoulder Harnesses - CHECK SECURE
16. ATIS, Clearance and Flight Management System - CHECK.

(Continued Next Page)

BEFORE TAXIING (Continued)

17. Flaps - CHECK and SET.

NOTE

Verify flap trim interconnect operation between 15 and 25 degrees.

18. Flight Controls - FREE and CORRECT.
19. Avionics - CHECK AND SET. EFIS test button - PUSH, and pilot verify the following:
 - a. Radio altimeter test value on pilot's and co-pilot's displays is 50 feet.
 - b. All digit readouts replaced with dashes (except radio altimeter).
 - c. All flags in view.
 - d. Command cue (if selected) bias from view.
 - e. Test light illuminates in upper left corner of PFD's.
20. AC Inverter Switch - CHECK INV 1 AND INV 2 (Verify gyro flags remain out of view and failed inverter is annunciated) Switch - NORM.
21. Cockpit Voice Recorder test button - PUSH and VERIFY operation.
 - a. Erase Button - PUSH and HOLD for 2-seconds.
22. Lights - AS REQUIRED.

TAXIING

1. Brakes - CHECK.

CAUTION

- IF, DURING TAXI, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE FLIGHT.
 - AVOID ABRUPT TURNS.
2. Engine Instruments - CHECK NORMAL.
 3. Flight Instruments - CHECK.
 4. Speed Brakes - CYCLE.
 5. Thrust Reversers (ON HARD SURFACE) - CHECKED and STOWED; CHECK SEQUENCING and TIMING OF LIGHTS.
 6. Thrust Reversers (ON GRAVEL SURFACE) - DO NOT DEPLOY; CHECK as follows:
 - a. Select EMERGENCY STOW and verify ARM annunciators illuminate.
 - b. Select Thrust Reverser Levers to DEPLOY and verify Thrust Reversers DO NOT DEPLOY.
 - c. Return Thrust Reverser Levers to STOW.
 - d. Select Emergency Stow Switches to NORM and verify all thrust reverser annunciators are extinguished.
 7. Pressurization Source Selector - NORM.

(Continued Next Page)

TAXIING (Continued)

8. Deice Systems - CHECK (when icing conditions are anticipated).

CAUTION

DO NOT OPERATE DEICE BOOTS WHEN AMBIENT AIR TEMPERATURE IS BELOW -40°C (-40°F).

9. Anti-Ice System - CHECK.

CAUTION

LIMIT GROUND OPERATION OF PITOT/STATIC HEAT TO TWO MINUTES TO PRECLUDE DAMAGE TO THE ANGLE-OF-ATTACK SYSTEM.

10. V_1 , V_R , V_2 , Fan Speed Settings - Look up, Input and CONFIRM proper V speeds on PFD's.
11. Crew Briefing - COMPLETE.

BEFORE TAKEOFF

1. Passenger Seats - POSITION in accordance with associated placard.
2. Anti-collision Lights - ON.

NOTE

Do not operate the anti-collision lights in conditions of fog, clouds or haze as the reflection of the light beam can cause disorientation or vertigo.

3. Landing or Recognition Lights - AS DESIRED.
4. Flaps - SET FOR TAKEOFF
5. Trim - SET FOR TAKEOFF.
6. Transponder - ON.
7. Radar - ON.
8. Anti-Ice/Deice Systems - ON if required.
9. Ignition - ON.
10. Pitot/Static Heat - ON.
11. Annunciator Panel - CLEAR except Ground Idle Light.
12. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK) for gravel runway.
- ENGAGE (UNLOCK/PUSH/LOCK) for hard surface runway.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

TAKEOFF

1. Throttles - SET for takeoff.
2. Engine Instruments - CHECK.
3. Brakes - RELEASE.

NOTE

During takeoff in crosswinds with the nose wheel steering disengaged, apply full rudder opposite the crosswind and use differential braking for directional control until the rudder becomes effective.

APPROACH

1. Seats, Seat Belts and Shoulder Harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. Landing Speeds - (V_{APP} and V_{REF}) - Look up, Input and Confirm.
5. Landing Data (N_1 , Landing Distance, Weight, and Factors) - CONFIRM.
6. Crew Briefing - COMPLETE.
7. Passenger Advisory Lights - PASS SAFETY.
8. Passenger Seats - POSITION in accordance with associated placard.
9. Flaps - APPROACH.

NOTE

For increased rates of descent in icing conditions, the use of landing flaps is recommended. This will allow a higher power setting, if necessary, to maintain anti-icing capabilities.

10. Engine Synchronizer - OFF.
11. Ground Idle Switch - NORM; unless ground icing anticipated or during touch and go landing - HIGH.
12. Fuel Crossfeed - OFF.
13. Antiskid - CHECK ON.
14. Nose Wheel Steering
(GRAVEL) Handle - DISENGAGE (UNLOCK/PULL/LOCK) for gravel runway.
- ENGAGE (UNLOCK/PUSH/LOCK) for hard surface runway.

NOTE

May require slight rudder pedal movement before pin engages or disengages.

15. Recognition Lights - ON.

BEFORE LANDING

1. Landing Gear - DOWN and LOCKED.
2. Landing Lights - AS DESIRED.
3. Windshield Bleed Air Switch - LO or HI for gravel runway - AS REQUIRED for hard surface runway.

(Continued Next Page)

BEFORE LANDING (Continued)

4. Windshield Bleed Air Valves - OFF.

NOTE

When landing on gravel runway, the left windshield bleed air valve may be ON if rain removal or windshield anti-ice protection is required.

5. Nose Wheel Spin-up Control - ON at least 90 seconds prior to touchdown for gravel runway - OFF for hard surface runway.
6. Ignition - ON.
7. Flaps - LAND.
8. Airspeed - V_{REF} .
9. Autopilot and Yaw Damper - OFF.
10. Annunciator Panel - CLEAR.
11. Pressurization - CHECK ZERO DIFFERENTIAL.
12. Speed Brakes - RETRACTED prior to 50 feet.

NOTE

Do not allow turbine speed RPM to be less than 52%.

13. N/W - RPM Light - GREEN (during approach through the flare) for gravel runway.

NOTE

After N/W - RPM Light illuminates green, the nose wheel spin-up control will have to be adjusted to keep the red overspeed light from illuminating.

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

2. Brakes - APPLY after touchdown.

CAUTION

IF, DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the antiskid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

(Continued Next Page)

LANDING (Continued)

3. Speed Brakes - EXTEND (after touchdown).

NOTE

If RH windshield rain removal is required, the right windshield bleed air valve should be turned to MAX and the nose wheel spin-up control turned OFF after nose wheel touchdown.

4. Thrust Reversers (HARD SURFACE ONLY) - DEPLOY after nose wheel on ground.

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY. THROTTLE LINKAGE DAMAGE MAY OCCUR, RESULTING IN LOSS OF POWER OR FLAMEOUT.

NOTE

- To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nose wheel is on the ground.
 - To avoid possible jamming of the throttle lockout cams, do not exceed approximately 15 pounds force on the thrust reverser levers.
5. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
 6. Reverse Power - AS REQUIRED. MAXIMUM 76.6% Fan Speed when OAT is below -18°C, or 80.1% Fan Speed with OAT at or above -18°C.
 7. Thrust Reversers - IDLE REVERSE at 60 KIAS.

ALL ENGINES GO-AROUND

1. Thrust - SET for takeoff.
2. Airplane Pitch Attitude - POSITIVE.
3. Rotation To +10 Degrees (use flight director go-around mode).
4. Flaps - TO/APPROACH.
5. Climb Speed - V_{APP} .
6. Landing Gear - UP (when positive rate of climb is established).
7. Flaps - UP.
8. Thrust - SET for climb.
9. Windshield Bleed Air Switch - OFF
10. Nose Wheel Spin-Up Control - OFF.

AFTER LANDING

1. Thrust Reversers - STOW (if deployed for hard surface).

CAUTION

DO NOT ADVANCE THROTTLES UNTIL THE THRUST REVERSER UNLOCK LIGHTS ARE OUT.

2. Flaps - UP.
3. Ignition - NORMAL.
4. Pitot/Static Heat - OFF.
5. Speed Brakes - RETRACT.
6. Windshield Bleed Air Switch - OFF
7. Nose Wheel Spin-Up Control - OFF.
8. Nose Wheel Steering (GRAVEL) Handle - ENGAGE (UNLOCK/PUSH/LOCK) after nose wheel touchdown .

NOTE

- May require slight rudder pedal movement before pin engages.
 - Use extreme care during single engine taxiing as the nose gear may caster 90 degrees and cause damage to the nose wheel turbine assembly.
 - Low speed taxiing with the nose wheel steering disengaged in deep gravel, particularly when turning, may result in the nose wheel turning to one side with no means to straighten it.
 - Use extreme care during turning maneuvers on gravel surfaces as the nose gear may castor 90 degrees and cause damage to the nose wheel turbine assembly.
9. Anti-Collision Lights and Recognition Lights - OFF, if necessary.
 10. Anti-Ice/Deice Systems - OFF.
 11. Transponder - OFF or STANDBY.
 12. Radar - OFF or STANDBY.

NOSE WHEEL SPIN-UP SYSTEM

The nose wheel spin-up system reduces gravel spray during nose wheel touch down by prespinning the nose wheel with ram outside air and engine bleed air obtained from the windshield bleed air system. To spin-up the nose wheel, the windshield bleed air switch should be positioned to either LO or HI. The windshield bleed air valves should be off (except in icing conditions) and the nose wheel spin-up control should be ON and adjusted to obtain proper nose wheel RPM. The system may require as much as 90 seconds to reach the minimum nose wheel RPM for touch down. The minimum RPM is indicated by illumination of the green N/W - RPM indicator light located next to the Landing Gear Control. The light will remain on as long as the nose wheel RPM is greater than 1600 RPM +50 or -50 RPM and less than 2400 RPM +50 or -50 RPM. Above 2400 RPM, the red light will illuminate indicating an overspeed condition. The spin-up control located to the right of the quadrant, may require adjustment to keep the nose wheel from spinning too fast or too slow. The pilot's left windshield bleed air valve may be used for rain removal or windshield anti-ice protection during approaches. After nose wheel touchdown, the nose wheel spin-up control may be turned off and both windshield bleed air valves may be turned on to provide external defog or rain removal as required. The nose wheel spin-up system should not be used for takeoff.

NOSE WHEEL STEERING DISENGAGE SYSTEM

Landing with the nose wheel not centered at touchdown (crosswind landings) or large nose wheel steering inputs at high speed may cause the nose wheel to deflect gravel into the engine opposite the rudder input. A nose wheel steering disengage system is provided to disengage the nose wheel steering from the rudder pedals thus allowing full rudder pedal movement without nose wheel steering input.

The rudder pedals supply nose wheel steering input through two concentric shafts. When the nose wheel steering GRAVEL handle, to the right of the center pedestal, is engaged (down position), a pin locks these two shafts together allowing rudder pedal input to the steering bungee for normal operation. Pulling the nose wheel steering GRAVEL handle up to the disengaged position, retracts the pin, unlocks the two shafts from one another, and locks the outer shaft in the neutral position. With outer shaft locked in the neutral position, the steering bungee holds the nose wheel centered (within the spring capabilities of the bungee) and allows full rudder input with no steering input. At low speed during initial takeoff, landing rollout or taxiing, nose wheel castering loads will override the bungee allowing directional control using differential braking. The nose steering disconnect system is spring-loaded to the engaged position when nose wheel steering (GRAVEL) handle is unlocked.

Low speed directional control on the ground with nose wheel steering disengaged, is primarily provided with differential braking. The best technique for crosswind takeoffs with nose wheel steering disengaged, has been found to be as follows:

- 1) Apply full rudder opposite the crosswind.
- 2) Use light differential braking during initial takeoff roll.
- 3) As the rudder becomes effective, proportionally reduce rudder deflection and use the rudder for directional control.

Landing characteristics are normal with nose wheel steering disengaged except that directional control after touchdown is accomplished using rudder and differential braking. The nose wheel steering may be engaged when the airplane has slowed to a safe speed during rollout.

PERFORMANCE

Performance data remains the same as the basic Approved Airplane Flight Manual with the following exceptions.

TAKEOFF

Refer to Page S24-25 for Flaps 7° takeoffs.
Refer to Page S24-39 for Flaps 15° takeoffs.

LANDING

Multiply normal hard surface landing distance from Figure 4-35 by 1.35 for tailwinds.
For zero and headwinds, multiply landing distance from Figure 4-35 by 1.25.
Landings are prohibited on gravel runways higher than 5000 feet.

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 7°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure S24-2 and correct for runway gradient and anti-icing requirements using the tables below.

If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 7°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT

RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1 *	MULTIPLY DISTANCE BY	V_1 *	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.65 **	ADD 4 KNOTS	1.65 **
1% UPHILL	ADD 2 KNOTS	1.2 **	ADD 2 KNOTS	1.2 **
1% DOWNHILL	SUBTRACT 4 KNOTS	1.03	NO CORRECTION	1.0
2% DOWNHILL	SUBTRACT 7 KNOTS	1.0	NO CORRECTION	1.0

* If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .

** Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

CORRECTION FACTORS - ANTI-ICE ON

V_1 - KIAS	NO CORRECTION
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.14

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 5000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure S24-2, the Takeoff Field Length is 3870.

V_1 is 102 KNOTS
 V_R is 107 KNOTS
 V_2 is 116 KNOTS
 V_{ENR} is 160 KNOTS

Figure S24-1

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS									
					10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	VR	V2						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS					
-25	98	4230	101	3380	102	3160	102	2940	103	2730	107	117	-25	97	4080	100	3280	100	3060	101	2850	101	2640	105	116
-20	98	4320	101	3450	102	3220	102	3000	102	2780	107	117	-20	97	4160	100	3340	100	3120	101	2900	101	2690	105	116
-15	98	4400	101	3530	102	3280	102	3060	102	2840	107	117	-15	97	4240	100	3400	100	3180	101	2960	101	2750	105	116
-10	98	4490	101	3600	101	3340	102	3110	102	2900	107	117	-10	97	4320	100	3460	100	3230	101	3010	101	2800	106	116
-5	98	4580	101	3670	101	3400	102	3180	102	2950	107	117	-5	96	4400	99	3530	100	3290	101	3070	101	2860	106	116
0	97	4660	100	3750	101	3470	102	3230	102	3010	107	117	0	96	4490	99	3600	100	3350	100	3130	101	2910	105	116
5	97	4750	100	3820	101	3540	102	3290	102	3070	107	117	5	96	4570	99	3680	100	3410	100	3190	101	2970	105	116
10	97	4840	100	3900	101	3610	102	3350	102	3130	107	117	10	96	4660	99	3750	100	3480	101	3240	101	3020	105	116
15	97	4930	100	3970	101	3680	102	3410	102	3190	107	117	15	96	4740	99	3820	100	3550	100	3300	101	3080	105	116
20	97	5070	100	4080	101	3790	102	3510	102	3260	107	117	20	96	4870	99	3930	100	3640	101	3380	101	3160	105	116
25	97	5200	100	4190	101	3890	102	3610	103	3350	107	117	25	96	5000	99	4030	100	3750	101	3470	101	3240	105	116
30	98	5480	101	4410	102	4090	102	3790	103	3510	106	116	30	97	5260	100	4240	101	3930	101	3650	102	3390	105	115
35	99	5820	102	4680	102	4340	103	4030	104	3730	106	116	35	98	5580	100	4490	101	4170	102	3870	103	3590	105	115
40	100	6210	102	4980	103	4620	104	4280	105	3970	106	116	40	99	5950	101	4780	102	4440	103	4110	103	3810	105	115
45	101	6650	103	5330	104	4940	105	4580	105	4240	106	116	45	100	6370	102	5110	103	4740	103	4390	104	4060	105	115
50	102	7150	104	5710	105	5300	105	4900	106	4540	106	116	50	101	6830	103	5470	104	5070	104	4700	105	4350	105	115
54	103	7590	105	6050	105	5600	106	5190	106	4800	106	116	54	101	7240	104	5790	104	5360	105	4970	105	4600	105	115

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS																
					10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT																		
	-25	95	3830	97	3110	98	2890	98	2690	99			2490	104	114	-25	93	3610	95	2950	96	2750		96	2550	97	2360	102	113										
-20	95	3910	97	3160	98	2950	98	2740	99	2540	104	114	-20	93	3680	95	3000	96	2800	96	2600	97	2410	102	113														
-15	95	3980	97	3220	98	3010	98	2800	99	2590	104	114	-15	93	3750	95	3060	95	2850	96	2650	97	2460	102	113														
-10	95	4060	97	3280	98	3060	98	2850	99	2650	104	114	-10	93	3820	95	3110	95	2900	96	2700	97	2500	102	113														
-5	94	4130	97	3330	98	3120	98	2900	99	2700	104	114	-5	93	3890	95	3170	95	2950	96	2750	96	2550	102	113														
0	94	4210	97	3390	98	3170	98	2960	99	2750	104	114	0	93	3960	95	3220	95	3010	96	2800	96	2600	102	113														
5	94	4280	97	3450	98	3230	98	3010	99	2800	104	114	5	92	4030	95	3280	95	3060	96	2850	96	2650	102	113														
10	94	4360	97	3510	98	3280	98	3070	99	2850	104	114	10	92	4100	95	3330	95	3120	96	2910	96	2700	102	113														
15	94	4440	97	3580	98	3340	98	3120	99	2910	104	114	15	92	4170	95	3380	95	3170	96	2960	96	2750	102	113														
20	94	4560	97	3680	98	3420	98	3200	99	2980	104	114	20	92	4270	95	3460	95	3240	96	3030	96	2820	102	112														
25	94	4680	97	3770	98	3500	98	3280	99	3060	104	114	25	92	4380	95	3540	96	3310	96	3100	97	2890	102	112														
30	95	4910	98	3970	99	3680	99	3430	100	3200	104	114	30	93	4590	96	3710	96	3460	97	3240	97	3020	102	112														
35	96	5210	99	4200	99	3900	100	3620	100	3380	104	114	35	94	4860	97	3930	97	3650	98	3410	98	3180	102	112														
40	97	5540	99	4460	100	4140	101	3840	101	3580	104	114	40	95	5160	97	4170	98	3870	99	3610	99	3370	102	112														
45	98	5920	100	4760	101	4420	102	4100	102	3800	104	114	45	96	5510	98	4440	99	4120	99	3830	100	3570	102	112														
50	99	6340	101	5090	102	4730	102	4380	103	4050	104	114	50	97	5890	99	4740	100	4400	100	4080	101	3800	102	112														
54	100	6710	102	5380	102	4990	103	4620	103	4280	104	114	54	98	6220	100	5000	100	4640	101	4300	101	4000	102	112														

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS									
					10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS					
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	VR	V2				
-25	91	3430	93	2800	93	2600	94	2410	94	2230	100	111	-25	88	3250	90	2650	91	2460	91	2280	92	2110	98	110
-20	91	3480	93	2850	93	2650	94	2460	94	2280	100	111	-20	88	3300	90	2700	91	2510	91	2330	92	2150	98	110
-15	91	3530	93	2900	93	2700	94	2510	94	2320	100	111	-15	88	3360	90	2750	91	2550	91	2370	92	2190	98	110
-10	91	3590	93	2950	93	2750	94	2560	94	2370	100	111	-10	88	3410	90	2790	91	2600	91	2420	92	2240	98	110
-5	91	3660	93	3000	93	2800	94	2600	94	2410	100	111	-5	88	3470	90	2840	91	2650	91	2460	92	2280	98	110
0	91	3720	93	3050	93	2850	94	2650	94	2460	100	111	0	88	3520	90	2890	91	2700	91	2510	92	2320	98	110
5	91	3790	93	3100	93	2900	94	2700	94	2510	100	111	5	88	3570	90	2940	91	2740	91	2550	92	2370	98	110
10	90	3860	93	3160	93	2950	94	2750	94	2550	100	111	10	88	3630	90	2990	91	2790	91	2600	92	2410	98	110
15	90	3920	92	3210	93	3000	94	2800	94	2600	100	111	15	88	3680	90	3040	91	2840	91	2640	92	2460	98	110
20	90	4020	93	3280	93	3070	94	2860	94	2660	100	111	20	88	3770	90	3110	91	2900	91	2710	92	2510	98	110
25	90	4110	93	3360	93	3140	94	2930	94	2730	100	111	25	89	3860	90	3170	91	2970	92	2770	92	2570	98	110
30	91	4290	94	3490	94	3270	94	3050	95	2840	100	111	30	89	4020	91	3300	92	3090	92	2880	93	2680	98	109
35	92	4530	94	3670	95	3440	95	3210	96	2990	100	110	35	90	4230	92	3460	92	3230	93	3020	93	2810	98	109
40	93	4810	95	3890	96	3640	96	3390	97	3160	100	110	40	91	4480	93	3650	93	3410	94	3190	94	2970	98	109
45	94	5120	96	4140	97	3850	97	3600	97	3360	100	110	45	92	4760	94	3870	94	3620	95	3380	95	3150	98	109
50	95	5470	97	4410	98	4090	98	3820	98	3560	100	110	50	93	5080	95	4100	95	3840	96	3580	96	3340	98	108
54	96	5770	98	4650	98	4310	99	4020	99	3750	100	110	54	94	5350	96	4310	96	4030	96	3760	97	3510	98	108

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-25	88	3210	88	2520	88	2330	89	2150	90	1990	97	109	-25	88	3200	88	2520	88	2310	88	2110	88	1920	95	107														
-20	88	3250	88	2570	88	2370	89	2200	90	2030	97	109	-20	88	3250	88	2560	88	2350	88	2150	88	1960	95	107														
-15	88	3300	88	2610	88	2410	89	2240	90	2070	97	109	-15	88	3290	88	2610	88	2400	88	2190	88	2000	95	107														
-10	88	3350	88	2660	88	2460	89	2280	90	2110	97	109	-10	88	3340	88	2650	88	2440	88	2230	88	2040	95	107														
-5	88	3400	88	2700	88	2500	89	2320	90	2150	97	109	-5	88	3390	88	2690	88	2480	88	2270	88	2070	95	107														
0	88	3450	88	2740	88	2550	89	2370	90	2190	97	109	0	88	3440	88	2730	88	2520	88	2310	88	2110	95	107														
5	88	3490	88	2780	88	2590	89	2410	90	2230	97	109	5	88	3480	88	2770	88	2560	88	2350	88	2140	95	107														
10	88	3540	88	2830	88	2640	89	2450	89	2270	97	109	10	88	3530	88	2820	88	2600	88	2380	88	2180	95	107														
15	88	3590	88	2870	88	2680	89	2490	89	2320	97	109	15	88	3580	88	2860	88	2640	88	2420	88	2220	95	107														
20	87	3610	88	2940	88	2740	89	2550	90	2370	97	108	20	87	3600	87	2880	87	2660	87	2440	87	2240	95	107														
25	86	3640	88	3000	89	2800	89	2610	90	2430	96	108	25	87	3620	87	2900	87	2680	87	2460	87	2280	95	107														
30	87	3770	89	3120	89	2910	90	2720	90	2520	96	108	30	85	3590	86	2940	87	2750	87	2560	88	2370	95	106														
35	88	3950	89	3260	90	3050	90	2840	91	2640	96	107	35	85	3730	87	3070	88	2870	88	2670	89	2480	94	106														
40	89	4170	90	3430	91	3200	91	2990	92	2780	96	107	40	86	3900	88	3220	88	3010	89	2800	89	2600	94	105														
45	90	4430	91	3630	92	3390	92	3160	93	2940	96	107	45	87	4110	89	3400	89	3170	90	2960	90	2750	94	105														
50	91	4710	92	3840	93	3600	93	3360	94	3120	96	107	50	88	4370	90	3600	90	3360	91	3130	91	2910	94	105														
54	91	4960	93	4030	94	3770	94	3520	94	3280	96	107	54	89	4590	91	3770	91	3520	91	3280	92	3050	94	105														

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS									
VENR = 160 KIAS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
-25	89 3190	89 2520	89 2310	89 2110	89 1920	94 107				-25	89 3190	89 2520	89 2320	89 2120	89 1930	94 108			
-20	89 3240	89 2560	89 2350	89 2150	89 1960	94 107				-20	89 3240	89 2570	89 2360	89 2160	89 1970	94 108			
-15	89 3290	89 2610	89 2400	89 2190	89 2000	94 107				-15	89 3290	89 2610	89 2400	89 2200	89 2010	94 108			
-10	89 3340	89 2650	89 2440	89 2230	89 2040	94 107				-10	89 3340	89 2650	89 2440	89 2240	89 2040	94 108			
-5	89 3380	89 2690	89 2480	89 2270	89 2080	94 107				-5	89 3380	89 2690	89 2480	89 2280	89 2080	94 108			
0	88 3430	88 2730	88 2520	88 2310	88 2110	94 107				0	89 3430	89 2730	89 2520	89 2310	89 2120	94 108			
5	88 3470	88 2770	88 2560	88 2350	88 2150	93 107				5	89 3470	89 2770	89 2560	89 2350	89 2150	94 107			
10	88 3520	88 2810	88 2600	88 2380	88 2180	93 106				10	89 3520	89 2820	89 2600	89 2390	89 2190	94 107			
15	88 3570	88 2860	88 2630	88 2420	88 2220	93 106				15	88 3560	88 2860	88 2640	88 2430	88 2220	94 107			
20	88 3590	88 2880	88 2650	88 2440	88 2240	93 106				20	88 3590	88 2880	88 2660	88 2440	88 2240	93 107			
25	87 3610	87 2890	87 2670	87 2460	87 2250	93 106				25	87 3610	87 2890	87 2670	87 2460	87 2260	93 106			
30	85 3570	85 2850	85 2630	85 2420	85 2230	93 105				30	85 3560	85 2850	85 2630	85 2420	85 2210	91 104			
35	83 3510	84 2890	85 2700	86 2510	86 2330	93 104				35	83 3500	83 2790	83 2570	83 2360	84 2180	91 103			
40	84 3680	85 3030	86 2830	86 2630	87 2440	92 104				40	81 3460	83 2840	83 2650	84 2460	84 2280	90 102			
45	85 3860	86 3180	87 2970	87 2760	88 2570	92 103				45	82 3630	84 2980	84 2780	85 2580	85 2400	90 102			
50	86 4070	87 3360	88 3140	88 2920	88 2710	92 103				50	83 3810	84 3140	85 2920	85 2720	86 2520	90 101			
54	87 4260	88 3520	88 3290	89 3060	89 2840	92 103				54	84 3980	85 3280	86 3060	86 2840	87 2640	90 101			

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		20 KTS		30 KTS																				
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-25	90	3200	90	2530	90	2330	90	2130	90	1940	95	109	-25	90	3210	90	2540	90	2340	90	2140	90	1960	96	110														
-20	89	3240	89	2570	89	2370	89	2170	89	1980	95	109	-20	90	3250	90	2590	90	2380	90	2180	90	1990	96	110														
-15	89	3290	89	2620	89	2410	89	2210	89	2020	95	109	-15	90	3300	90	2630	90	2420	90	2220	90	2030	96	110														
-10	89	3340	89	2660	89	2450	89	2250	89	2050	95	109	-10	90	3350	90	2670	90	2460	90	2260	90	2070	96	110														
-5	89	3390	89	2700	89	2490	89	2290	89	2090	95	109	-5	90	3400	90	2710	90	2500	90	2300	90	2110	96	110														
0	89	3430	89	2740	89	2530	89	2320	89	2130	95	109	0	90	3440	90	2750	90	2540	90	2340	90	2140	96	110														
5	89	3480	89	2780	89	2570	89	2360	89	2160	95	108	5	89	3480	89	2790	89	2580	89	2370	89	2180	95	110														
10	89	3520	89	2820	89	2610	89	2400	89	2200	95	108	10	89	3530	89	2830	89	2620	89	2410	89	2210	95	109														
15	89	3570	89	2860	89	2640	89	2430	89	2230	95	108	15	89	3580	89	2870	89	2660	89	2450	89	2250	95	109														
20	88	3590	88	2880	88	2660	88	2450	88	2250	94	108	20	89	3590	89	2890	89	2670	89	2460	89	2260	95	109														
25	88	3610	88	2900	88	2680	88	2470	88	2260	93	107	25	88	3610	88	2910	88	2690	88	2480	88	2270	94	108														
30	86	3560	86	2850	86	2630	86	2420	86	2220	91	104	30	86	3560	86	2850	86	2640	86	2430	86	2230	92	105														
35	83	3490	83	2780	83	2560	83	2360	83	2150	89	102	35	84	3480	84	2780	84	2570	84	2360	84	2160	89	102														
40	81	3420	81	2720	81	2500	81	2300	82	2130	88	101	40	81	3410	81	2710	81	2500	81	2290	81	2090	86	99														
45	79	3400	81	2790	81	2600	82	2410	83	2230	88	100	45	79	3330	79	2640	79	2420	79	2250	80	2080	86	99														
50	80	3570	82	2930	82	2730	83	2530	83	2350	88	100	50	77	3340	79	2730	80	2540	80	2360	81	2180	86	98														
54	81	3720	82	3050	83	2840	83	2640	84	2440	88	99	54	78	3470	80	2840	80	2640	81	2450	81	2270	86	98														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS											WEIGHT = 16000 LBS												
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS		
					V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST	V1
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1		DIST	V1	DIST	V1	DIST	VR V2 KIAS					
-25	98	4360	101	3490	101	3250	102	3030	102	2810	107 117	-25	97	4200	99	3370	100	3150	100	2930	101	2720	106 116
-20	98	4450	101	3560	101	3310	102	3090	102	2870	107 117	-20	96	4280	99	3430	100	3210	100	2990	101	2780	106 116
-15	97	4540	100	3640	101	3370	102	3150	102	2930	107 117	-15	96	4360	99	3500	100	3260	100	3050	101	2830	106 116
-10	97	4630	100	3710	101	3440	102	3210	102	2990	107 117	-10	96	4450	99	3570	100	3320	100	3100	101	2890	106 116
-5	97	4710	100	3790	101	3510	102	3270	102	3050	107 117	-5	96	4530	99	3650	100	3380	100	3160	101	2940	106 116
0	97	4800	100	3870	101	3580	102	3330	102	3100	107 117	0	96	4620	99	3720	100	3450	100	3220	101	3000	106 116
5	97	4890	100	3940	101	3660	102	3390	102	3160	107 117	5	96	4710	99	3790	100	3520	100	3280	101	3060	106 116
10	97	4990	100	4020	101	3730	102	3460	102	3220	107 117	10	96	4790	99	3870	100	3590	100	3340	101	3120	106 116
15	97	5120	100	4130	101	3840	102	3550	102	3300	107 117	15	96	4920	99	3970	100	3690	100	3420	101	3200	105 116
20	97	5320	100	4290	101	3980	102	3700	103	3420	107 117	20	96	5110	99	4120	100	3830	101	3550	101	3310	105 116
25	98	5550	101	4470	101	4160	102	3850	103	3570	107 116	25	96	5330	99	4300	100	3990	101	3710	102	3440	105 115
30	98	5890	101	4740	102	4400	103	4080	104	3780	106 116	30	97	5650	100	4560	101	4230	102	3920	102	3640	105 115
35	99	6280	102	5040	103	4680	104	4340	104	4020	106 116	35	98	6010	101	4840	102	4490	102	4170	103	3860	105 115
40	100	6710	103	5380	104	4990	104	4630	105	4280	106 116	40	99	6420	102	5160	102	4790	103	4440	104	4110	105 115
45	101	7200	104	5760	104	5350	105	4950	105	4580	106 116	45	100	6890	103	5520	103	5120	104	4750	104	4390	105 115
50	102	7750	104	6190	105	5730	106	5310	106	4910	106 116	50	101	7400	103	5920	104	5490	104	5080	105	4710	105 115
52	103	7990	105	6370	105	5900	106	5460	106	5060	106 116	52	102	7620	104	6090	104	5650	105	5230	105	4840	105 115

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS				
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			
-25	95	3950	97	3200	98	2980	98	2770	99	2570	104	114	-25	93	3720	95	3030	95	2830	96	2630	96	2440	102	113
-20	94	4020	97	3250	98	3040	98	2830	99	2630	104	114	-20	93	3790	95	3090	95	2880	96	2680	96	2490	102	113
-15	94	4100	97	3310	97	3100	98	2880	99	2680	104	114	-15	92	3860	95	3150	95	2930	96	2730	96	2540	102	113
-10	94	4180	97	3370	97	3150	98	2940	98	2730	104	114	-10	92	3930	95	3200	95	2990	96	2780	96	2590	102	113
-5	94	4250	97	3430	97	3210	98	2990	98	2790	104	114	-5	92	4000	95	3260	95	3040	96	2840	96	2640	102	113
0	94	4330	97	3490	97	3260	98	3050	98	2840	104	114	0	92	4070	95	3310	95	3100	96	2890	96	2690	102	113
5	94	4410	97	3560	97	3320	98	3100	98	2890	104	114	5	92	4150	95	3370	95	3150	96	2940	96	2740	102	113
10	94	4490	97	3630	97	3380	98	3160	98	2940	104	114	10	92	4220	95	3420	95	3210	96	2990	96	2790	102	113
15	94	4600	97	3720	98	3460	98	3240	98	3020	104	114	15	92	4320	95	3500	95	3280	96	3070	96	2860	102	113
20	94	4780	97	3860	98	3590	99	3350	99	3120	104	114	20	92	4470	95	3620	96	3380	96	3160	97	2950	102	112
25	95	4980	97	4020	98	3740	99	3470	99	3250	104	114	25	93	4650	96	3760	96	3500	97	3280	97	3060	102	112
30	96	5270	98	4260	99	3950	100	3670	100	3420	104	114	30	94	4920	96	3980	97	3690	97	3460	98	3220	102	112
35	96	5600	99	4520	100	4190	101	3890	101	3620	104	114	35	95	5220	97	4210	98	3910	98	3650	99	3410	102	112
40	97	5970	100	4810	101	4460	101	4140	102	3840	104	114	40	95	5550	98	4480	99	4160	99	3860	100	3610	102	112
45	98	6390	101	5140	101	4770	102	4420	102	4100	104	114	45	96	5930	99	4780	99	4440	100	4120	100	3830	102	112
50	99	6850	101	5500	102	5100	103	4730	103	4380	104	114	50	97	6350	99	5110	100	4740	101	4400	101	4080	102	112
52	100	7050	102	5650	102	5250	103	4860	103	4500	104	114	52	98	6530	100	5250	100	4870	101	4520	101	4190	102	112

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS													
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS								VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS								VR V2 KIAS
			10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS				
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		
			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	
-25	91 3510	92 2880	93 2680	94 2490	94 2300	100 111	-25	88 3330	90 2720	91 2530	91 2350	92 2180	98 110										
-20	91 3570	92 2930	93 2730	94 2540	94 2350	100 111	-20	88 3390	90 2770	91 2580	91 2400	92 2220	98 110										
-15	91 3630	92 2980	93 2780	94 2590	94 2400	100 111	-15	88 3440	90 2820	91 2630	91 2450	92 2270	98 110										
-10	90 3700	92 3030	93 2830	94 2640	94 2450	100 111	-10	88 3500	90 2870	91 2680	91 2490	92 2310	98 110										
-5	90 3760	92 3090	93 2880	93 2680	94 2490	100 111	-5	88 3550	90 2920	91 2730	91 2540	92 2350	98 110										
0	90 3830	92 3140	93 2930	93 2730	94 2540	100 111	0	88 3610	90 2970	91 2770	91 2580	92 2400	98 110										
5	90 3900	92 3200	93 2980	93 2780	94 2590	100 111	5	88 3660	90 3020	91 2820	91 2630	92 2440	98 110										
10	90 3970	92 3250	93 3040	93 2830	94 2640	100 111	10	88 3720	90 3070	91 2870	91 2680	92 2490	98 110										
15	90 4060	92 3320	93 3110	94 2900	94 2700	100 111	15	88 3810	90 3140	91 2940	91 2740	92 2550	98 110										
20	90 4200	93 3420	93 3200	94 2990	94 2790	100 111	20	88 3940	91 3240	91 3030	92 2830	92 2630	98 110										
25	91 4350	93 3540	94 3310	94 3100	95 2890	100 111	25	89 4080	91 3350	91 3130	92 2920	92 2720	98 109										
30	92 4590	94 3710	95 3480	95 3250	95 3030	100 110	30	90 4280	92 3500	92 3280	93 3060	93 2850	98 109										
35	93 4860	95 3930	96 3670	96 3430	96 3200	100 110	35	90 4520	93 3680	93 3450	93 3220	94 3000	98 109										
40	93 5160	96 4170	96 3880	97 3630	97 3390	100 110	40	91 4800	94 3890	94 3650	94 3410	95 3180	98 109										
45	94 5510	97 4450	97 4130	98 3850	98 3600	100 110	45	92 5110	95 4130	95 3870	95 3610	96 3370	98 108										
50	95 5880	97 4740	98 4410	99 4100	99 3820	100 110	50	93 5460	95 4400	96 4100	96 3830	96 3580	98 108										
52	96 6040	98 4870	98 4530	99 4200	99 3920	100 110	52	94 5600	96 4520	96 4210	97 3930	97 3670	98 108										

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											VENR = 160 KIAS											WEIGHT = 13000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	KIAS																		
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT												
-25	88	3310	88	2620	88	2410	89	2220	90	2050	97	109	-25	89	3300	89	2620	89	2400	89	2200	89	2010	95	107	-25	89	3300	89	2620	89	2400	89	2200	89	2010	95	107					
-20	88	3360	88	2660	88	2450	89	2260	89	2090	97	109	-20	89	3350	89	2660	89	2450	89	2240	89	2040	95	107	-20	89	3350	89	2660	89	2450	89	2240	89	2040	95	107					
-15	88	3410	88	2710	88	2490	89	2310	89	2140	97	109	-15	89	3400	89	2700	89	2490	89	2280	89	2080	95	107	-15	89	3400	89	2700	89	2490	89	2280	89	2080	95	107					
-10	88	3460	88	2750	88	2540	89	2350	89	2180	97	109	-10	89	3450	89	2750	89	2530	89	2320	89	2120	95	107	-10	89	3450	89	2750	89	2530	89	2320	89	2120	95	107					
-5	88	3510	88	2800	88	2580	89	2400	89	2220	97	109	-5	88	3500	88	2790	88	2570	88	2360	88	2160	95	107	-5	88	3500	88	2790	88	2570	88	2360	88	2160	95	107					
0	88	3560	88	2840	88	2620	89	2440	89	2260	97	109	0	88	3550	88	2840	88	2620	88	2410	88	2200	95	107	0	88	3550	88	2840	88	2620	88	2410	88	2200	95	107					
5	88	3610	88	2890	88	2670	89	2480	89	2300	97	109	5	88	3600	88	2880	88	2660	88	2450	88	2240	95	107	5	88	3600	88	2880	88	2660	88	2450	88	2240	95	107					
10	88	3660	88	2930	88	2710	89	2530	89	2350	97	109	10	88	3650	88	2920	88	2700	88	2480	88	2280	95	107	10	88	3650	88	2920	88	2700	88	2480	88	2280	95	107					
15	87	3690	88	2970	88	2770	89	2590	89	2400	97	109	15	88	3680	88	2950	88	2720	88	2510	88	2300	95	107	15	88	3680	88	2950	88	2720	88	2510	88	2300	95	107					
20	86	3700	88	3060	89	2860	89	2670	90	2480	96	108	20	87	3670	87	2940	87	2720	87	2510	87	2330	95	107	20	87	3670	87	2940	87	2720	87	2510	87	2330	95	107					
25	87	3820	89	3160	89	2950	90	2750	90	2560	96	108	25	85	3660	86	2980	87	2780	87	2590	88	2410	95	107	25	85	3660	86	2980	87	2780	87	2590	88	2410	95	107					
30	88	4010	89	3300	90	3090	90	2880	91	2680	96	107	30	85	3770	87	3110	87	2910	88	2710	88	2520	94	106	30	85	3770	87	3110	87	2910	88	2710	88	2520	94	106					
35	88	4210	90	3460	91	3240	91	3020	91	2810	96	107	35	86	3940	88	3260	88	3040	89	2840	89	2640	94	105	35	86	3940	88	3260	88	3040	89	2840	89	2640	94	105					
40	89	4460	91	3650	91	3420	92	3190	92	2970	96	107	40	87	4140	88	3420	89	3200	89	2980	90	2770	94	105	40	87	4140	88	3420	89	3200	89	2980	90	2770	94	105					
45	90	4740	92	3870	92	3620	93	3380	93	3150	96	107	45	88	4400	89	3620	90	3390	90	3160	91	2940	94	105	45	88	4400	89	3620	90	3390	90	3160	91	2940	94	105					
50	91	5050	93	4100	93	3840	94	3590	94	3340	96	107	50	89	4680	90	3840	91	3590	91	3350	92	3120	94	105	50	89	4680	90	3840	91	3590	91	3350	92	3120	94	105					
52	92	5190	93	4200	94	3930	94	3680	94	3430	96	107	52	89	4800	91	3930	91	3680	92	3430	92	3190	94	105	52	89	4800	91	3930	91	3680	92	3430	92	3190	94	105					

WEIGHT = 12500 LBS											VENR = 160 KIAS											WEIGHT = 12000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																				
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS										
-25	89	3300	89	2610	89	2400	89	2200	89	2010	94 107	-25	89	3300	89	2620	89	2410	89	2210	89	2020	95 108																				
-20	89	3350	89	2660	89	2450	89	2240	89	2050	94 107	-20	89	3350	89	2660	89	2450	89	2250	89	2050	95 108																				
-15	89	3400	89	2700	89	2490	89	2280	89	2090	94 107	-15	89	3400	89	2710	89	2490	89	2290	89	2090	95 108																				
-10	89	3450	89	2750	89	2530	89	2320	89	2130	94 107	-10	89	3450	89	2750	89	2540	89	2330	89	2130	95 108																				
-5	89	3500	89	2790	89	2570	89	2370	89	2160	94 107	-5	89	3490	89	2790	89	2580	89	2370	89	2170	95 108																				
0	89	3550	89	2840	89	2620	89	2410	89	2200	94 107	0	89	3540	89	2840	89	2620	89	2410	89	2210	95 108																				
5	89	3590	89	2880	89	2660	89	2450	89	2240	94 107	5	89	3590	89	2880	89	2660	89	2450	89	2250	95 108																				
10	89	3640	89	2920	89	2700	89	2490	89	2280	94 107	10	89	3640	89	2920	89	2700	89	2490	89	2280	95 108																				
15	88	3670	88	2940	88	2720	88	2510	88	2300	93 106	15	88	3660	88	2950	88	2720	88	2510	88	2300	94 107																				
20	87	3660	87	2940	87	2710	87	2500	87	2290	93 106	20	87	3650	87	2930	87	2710	87	2500	87	2290	93 106																				
25	85	3640	85	2920	85	2690	85	2480	85	2270	93 105	25	86	3630	86	2910	86	2690	86	2480	86	2270	91 104																				
30	83	3590	84	2930	85	2730	85	2550	86	2360	93 105	30	83	3570	83	2850	83	2630	83	2420	83	2210	91 103																				
35	83	3710	85	3060	86	2860	86	2660	87	2470	92 104	35	81	3510	82	2870	83	2680	84	2490	84	2310	90 103																				
40	84	3890	86	3210	86	3000	87	2790	87	2600	92 103	40	82	3660	83	3010	84	2810	84	2610	85	2420	90 102																				
45	86	4100	87	3380	87	3160	88	2940	88	2740	92 103	45	83	3840	84	3160	85	2950	85	2750	86	2550	90 101																				
50	87	4330	88	3580	88	3350	89	3120	89	2900	92 103	50	84	4050	85	3340	86	3110	86	2900	86	2690	90 101																				
52	87	4440	88	3670	89	3430	89	3190	89	2970	92 103	52	84	4140	86	3420	86	3190	86	2970	87	2760	90 101																				

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	
-25	97 4490	100 3600	101 3340	102 3120	102 2900	107 117			-25	96 4320	99 3470	100 3230	100 3020	101 2800	106 116				
-20	97 4580	100 3680	101 3410	102 3180	102 2960	107 117			-20	96 4410	99 3540	100 3300	100 3080	101 2860	106 116				
-15	97 4680	100 3760	101 3480	102 3240	102 3020	107 117			-15	96 4500	99 3620	100 3360	100 3140	101 2920	106 116				
-10	97 4760	100 3840	101 3560	101 3300	102 3080	107 117			-10	96 4580	99 3690	100 3420	100 3200	101 2980	106 116				
-5	97 4850	100 3910	101 3630	101 3360	102 3140	107 117			-5	95 4670	99 3760	99 3490	100 3250	100 3040	106 116				
0	96 4940	99 3990	100 3700	101 3430	102 3190	107 117			0	95 4750	98 3830	99 3560	100 3310	100 3090	106 116				
5	96 5040	99 4070	100 3780	101 3500	102 3260	107 117			5	95 4840	98 3920	99 3630	100 3370	100 3150	106 116				
10	96 5140	99 4150	100 3860	101 3580	102 3320	107 117			10	95 4940	98 3990	99 3710	100 3440	100 3210	106 116				
15	97 5360	100 4330	101 4030	101 3740	102 3460	107 117			15	95 5150	99 4160	99 3870	100 3590	101 3340	105 116				
20	97 5650	100 4560	101 4240	102 3930	103 3640	107 116			20	96 5420	99 4380	100 4070	101 3780	102 3500	105 115				
25	98 5980	101 4820	102 4470	103 4150	103 3850	106 116			25	97 5730	100 4620	101 4300	102 3990	102 3700	105 115				
30	99 6360	102 5120	103 4750	103 4410	104 4080	106 116			30	98 6090	101 4910	101 4560	102 4230	103 3920	105 115				
35	100 6780	102 5450	103 5060	104 4690	105 4340	106 116			35	99 6490	101 5220	102 4850	103 4500	103 4170	105 115				
40	101 7270	103 5830	104 5400	105 5010	105 4640	106 116			40	100 6950	102 5580	103 5180	103 4800	104 4450	105 115				
45	102 7820	104 6250	105 5790	105 5370	106 4970	106 116			45	101 7460	103 5980	104 5540	104 5140	105 4760	105 115				
50	103 8440	105 6710	105 6220	106 5760	106 5330	106 116			50	102 8030	104 6420	104 5950	105 5510	105 5110	105 115				

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2				
				10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS						
	V1	DIST		V1	DIST	V1	DIST	V1	DIST			V1	DIST		V1	DIST	V1	DIST	V1	DIST					
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT					
-25	94	4060	97	3280	97	3070	98	2860	98	2660	104	114	-25	92	3830	95	3120	95	2910	96	2710	96	2510	102	113
-20	94	4140	97	3340	97	3130	98	2920	98	2710	104	114	-20	92	3900	95	3180	95	2970	96	2760	96	2570	102	113
-15	94	4220	97	3410	97	3190	98	2970	98	2770	104	114	-15	92	3980	95	3240	95	3020	96	2820	96	2620	102	113
-10	94	4300	97	3470	97	3240	98	3030	98	2820	104	114	-10	92	4050	95	3290	95	3080	96	2870	96	2670	102	113
-5	94	4380	97	3530	97	3300	98	3090	98	2880	104	114	-5	92	4120	95	3350	95	3130	96	2920	96	2720	102	113
0	93	4460	97	3600	97	3360	98	3140	98	2930	104	114	0	92	4190	95	3400	95	3190	96	2980	96	2770	102	113
5	93	4540	96	3670	97	3420	98	3200	98	2980	104	114	5	92	4270	95	3460	95	3250	95	3030	96	2830	102	113
10	93	4630	96	3740	97	3480	98	3250	98	3040	104	114	10	91	4350	95	3520	95	3300	95	3090	96	2880	102	113
15	94	4820	97	3900	98	3620	98	3380	99	3150	104	114	15	92	4510	95	3660	95	3420	96	3200	96	2980	102	112
20	94	5060	97	4090	98	3800	99	3530	99	3300	104	114	20	92	4730	95	3830	96	3560	96	3340	97	3110	102	112
25	95	5340	98	4320	99	4010	100	3730	100	3470	104	114	25	93	4980	96	4030	97	3750	97	3500	98	3270	102	112
30	96	5670	99	4580	100	4250	100	3950	101	3670	104	114	30	94	5280	97	4270	98	3970	98	3690	99	3450	102	112
35	97	6040	99	4870	100	4520	101	4190	102	3890	104	114	35	95	5610	98	4530	98	4210	99	3910	99	3650	102	112
40	98	6440	100	5190	101	4820	102	4470	102	4140	104	114	40	96	5980	98	4830	99	4480	100	4160	100	3870	102	112
45	99	6910	101	5550	102	5150	102	4780	103	4430	104	114	45	97	6400	99	5150	100	4790	100	4440	101	4120	102	112
50	100	7420	102	5950	102	5520	103	5120	103	4740	104	114	50	98	6860	100	5520	100	5120	101	4750	101	4400	102	112

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR V2														
	10 KTS			20 KTS		30 KTS		10 KTS		20 KTS				30 KTS																									
	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST		V1	DIST	V1	DIST																			
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT																	
-25	90	3600	92	2960	93	2760	93	2570	94	2380	100	111	-25	88	3440	90	2800	90	2610	91	2430	92	2250	98	110														
-20	90	3670	92	3010	93	2810	93	2620	94	2430	100	111	-20	88	3490	90	2850	90	2660	91	2470	92	2290	98	110														
-15	90	3740	92	3070	93	2860	93	2670	94	2480	100	111	-15	88	3540	90	2910	90	2710	91	2520	92	2340	98	110														
-10	90	3810	92	3120	93	2920	93	2720	94	2530	100	111	-10	88	3590	90	2960	90	2760	91	2570	92	2390	98	110														
-5	90	3870	92	3180	93	2970	93	2770	94	2570	100	111	-5	88	3650	90	3010	90	2810	91	2620	92	2430	98	110														
0	90	3940	92	3230	93	3020	93	2820	94	2620	100	111	0	88	3720	90	3050	90	2860	91	2660	91	2480	98	110														
5	90	4010	92	3290	93	3070	93	2870	94	2670	100	111	5	88	3790	90	3110	90	2910	91	2710	91	2520	98	110														
10	90	4080	92	3340	93	3130	93	2920	94	2720	100	111	10	88	3860	90	3160	90	2960	91	2760	91	2570	98	110														
15	90	4240	93	3450	93	3240	94	3020	94	2820	100	111	15	88	3970	90	3270	91	3060	91	2860	92	2660	98	110														
20	91	4420	93	3590	94	3370	94	3150	95	2940	100	111	20	89	4140	91	3400	91	3180	92	2970	92	2770	98	109														
25	91	4650	94	3760	94	3520	95	3300	95	3070	100	110	25	89	4340	92	3540	92	3320	92	3100	93	2890	98	109														
30	92	4920	95	3980	95	3710	96	3470	96	3240	100	110	30	90	4570	92	3720	93	3490	93	3260	94	3040	98	109														
35	93	5220	96	4220	96	3920	97	3670	97	3430	100	110	35	91	4850	93	3930	94	3680	94	3440	95	3210	98	109														
40	94	5550	96	4490	97	4170	97	3890	98	3630	100	110	40	92	5150	94	4170	95	3900	95	3640	95	3400	98	109														
45	95	5930	97	4790	98	4450	98	4130	99	3860	100	110	45	93	5500	95	4440	96	4130	96	3870	96	3610	98	108														
50	96	6340	98	5110	98	4750	99	4410	99	4100	100	110	50	94	5870	96	4740	96	4410	97	4110	97	3840	98	108														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST		V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT												
-25	89	3420	89	2720	89	2500	89	2290	89	2120	97 109	-25	89	3410	89	2710	89	2500	89	2290	89	2090	95 107																
-20	89	3470	89	2760	89	2550	89	2340	89	2160	97 109	-20	89	3460	89	2760	89	2540	89	2330	89	2130	95 107																
-15	89	3530	89	2810	89	2590	89	2380	89	2210	97 109	-15	89	3520	89	2810	89	2590	89	2380	89	2170	95 107																
-10	88	3580	88	2860	88	2640	88	2430	89	2250	97 109	-10	89	3570	89	2850	89	2630	89	2420	89	2220	95 107																
-5	88	3630	88	2910	88	2680	88	2470	89	2290	97 109	-5	89	3620	89	2900	89	2680	89	2460	89	2260	95 107																
0	88	3690	88	2950	88	2730	88	2510	89	2330	97 109	0	89	3680	89	2950	89	2720	89	2510	89	2300	95 107																
5	88	3740	88	3000	88	2770	88	2560	89	2380	97 109	5	89	3720	89	2990	89	2770	89	2550	89	2340	95 107																
10	88	3800	88	3040	88	2810	88	2610	89	2420	97 109	10	89	3770	89	3040	89	2810	89	2590	89	2380	95 107																
15	87	3780	88	3090	88	2890	89	2700	90	2510	97 108	15	87	3760	87	3020	87	2790	87	2570	87	2360	95 107																
20	87	3880	88	3210	89	3000	90	2800	90	2610	96 108	20	85	3720	86	3030	87	2830	87	2640	88	2450	95 107																
25	87	4060	89	3350	90	3130	90	2920	91	2720	96 107	25	85	3810	87	3150	87	2950	88	2750	88	2560	94 106																
30	88	4260	90	3500	90	3280	91	3060	91	2850	96 107	30	86	3980	87	3300	88	3080	88	2880	89	2680	94 106																
35	89	4500	91	3690	91	3450	92	3220	92	3000	96 107	35	87	4190	88	3460	89	3230	89	3020	89	2810	94 105																
40	90	4780	92	3900	92	3650	93	3410	93	3180	96 107	40	88	4430	89	3650	90	3420	90	3190	90	2970	94 105																
45	91	5090	93	4130	93	3870	93	3620	94	3370	96 107	45	89	4710	90	3870	91	3620	91	3380	91	3150	94 105																
50	92	5430	94	4390	94	4110	94	3840	95	3580	96 107	50	90	5020	91	4100	91	3840	92	3580	92	3340	94 105																

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST		V1	DIST				
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT		
-25	89	3410	89	2710	89	2500	89	2290	89	2100	95	108	-25	90	3410	90	2720	90	2500	90	2300	90	2100	95	109
-20	89	3460	89	2760	89	2540	89	2340	89	2140	95	108	-20	90	3460	90	2760	90	2550	90	2340	90	2140	95	109
-15	89	3510	89	2810	89	2590	89	2380	89	2180	95	108	-15	89	3510	89	2810	89	2590	89	2380	89	2180	95	109
-10	89	3560	89	2850	89	2630	89	2420	89	2220	95	108	-10	89	3560	89	2850	89	2640	89	2430	89	2220	95	109
-5	89	3620	89	2900	89	2680	89	2460	89	2260	95	108	-5	89	3610	89	2900	89	2680	89	2470	89	2270	95	109
0	89	3670	89	2950	89	2720	89	2510	89	2300	95	108	0	89	3670	89	2950	89	2730	89	2510	89	2310	95	109
5	89	3720	89	2990	89	2770	89	2550	89	2340	95	108	5	89	3720	89	2990	89	2770	89	2550	89	2350	95	109
10	89	3770	89	3030	89	2810	89	2590	89	2380	95	108	10	89	3760	89	3040	89	2810	89	2590	89	2390	95	109
15	87	3750	87	3010	87	2790	87	2570	87	2360	93	106	15	88	3740	88	3010	88	2790	88	2570	88	2360	93	107
20	86	3710	86	2980	86	2750	86	2530	86	2320	93	105	20	86	3700	86	2970	86	2750	86	2530	86	2320	91	104
25	83	3660	84	2970	85	2770	85	2580	86	2400	93	105	25	84	3650	84	2920	84	2700	84	2480	84	2270	91	103
30	83	3750	85	3100	85	2900	86	2700	86	2510	92	104	30	81	3590	82	2910	83	2720	83	2530	84	2350	90	103
35	84	3920	86	3250	86	3030	87	2830	87	2630	92	104	35	82	3690	83	3040	84	2840	84	2650	85	2460	90	102
40	85	4120	86	3410	87	3190	87	2970	88	2770	92	103	40	82	3870	84	3190	84	2980	85	2780	85	2580	90	101
45	86	4360	88	3610	88	3370	88	3150	89	2930	92	103	45	84	4070	85	3360	85	3140	86	2930	86	2720	90	101
50	87	4640	89	3820	89	3580	89	3340	90	3110	92	103	50	85	4310	86	3560	86	3330	87	3100	87	2880	90	101

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS														
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						
	10 KTS		WIND		10 KTS		20 KTS			30 KTS		10 KTS		WIND		10 KTS			20 KTS		30 KTS		10 KTS		WIND			10 KTS		20 KTS		30 KTS						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-25	90	3410	90	2730	90	2510	90	2310	90	2110	96	110	-25	90	3430	90	2740	90	2530	90	2330	90	2130	97	111	-25	90	3410	90	2730	90	2510	90	2310	90	2110	96	110
-20	90	3460	90	2770	90	2560	90	2350	90	2150	96	110	-20	90	3480	90	2790	90	2570	90	2370	90	2170	97	111	-20	90	3460	90	2770	90	2560	90	2350	90	2150	96	110
-15	90	3510	90	2820	90	2600	90	2390	90	2190	96	110	-15	90	3530	90	2830	90	2620	90	2410	90	2210	97	111	-15	90	3510	90	2820	90	2600	90	2390	90	2190	96	110
-10	90	3570	90	2860	90	2650	90	2440	90	2230	96	110	-10	90	3580	90	2880	90	2660	90	2450	90	2250	97	111	-10	90	3570	90	2860	90	2650	90	2440	90	2230	96	110
-5	90	3620	90	2910	90	2690	90	2480	90	2280	96	110	-5	90	3630	90	2920	90	2710	90	2490	90	2290	97	111	-5	90	3620	90	2910	90	2690	90	2480	90	2280	96	110
0	90	3670	90	2960	90	2740	90	2520	90	2320	96	110	0	90	3680	90	2970	90	2750	90	2540	90	2330	97	111	0	90	3670	90	2960	90	2740	90	2520	90	2320	96	110
5	90	3720	90	3000	90	2780	90	2560	90	2360	96	110	5	90	3730	90	3010	90	2790	90	2580	90	2370	97	111	5	90	3720	90	3000	90	2780	90	2560	90	2360	96	110
10	90	3770	90	3040	90	2820	90	2600	90	2400	96	110	10	90	3780	90	3060	90	2830	90	2620	90	2410	97	111	10	90	3770	90	3040	90	2820	90	2600	90	2400	96	110
15	88	3740	88	3020	88	2790	88	2580	88	2370	94	108	15	88	3750	88	3030	88	2800	88	2590	88	2380	95	109	15	88	3740	88	3020	88	2790	88	2580	88	2370	94	108
20	86	3690	86	2970	86	2750	86	2530	86	2330	92	105	20	86	3690	86	2980	86	2750	86	2540	86	2330	92	106	20	86	3690	86	2970	86	2750	86	2530	86	2330	92	105
25	84	3640	84	2920	84	2690	84	2480	84	2270	90	102	25	84	3630	84	2920	84	2700	84	2480	84	2280	90	103	25	84	3640	84	2920	84	2690	84	2480	84	2270	90	102
30	82	3570	82	2860	82	2630	82	2420	82	2220	88	101	30	82	3560	82	2850	82	2630	82	2420	82	2220	87	100	30	82	3570	82	2860	82	2630	82	2420	82	2220	88	101
35	79	3510	80	2850	81	2660	82	2470	82	2290	88	101	35	80	3500	80	2790	80	2570	80	2360	80	2150	86	99	35	79	3510	80	2850	81	2660	82	2470	82	2290	88	101
40	80	3630	81	2980	82	2780	82	2590	83	2400	88	100	40	77	3430	78	2780	79	2590	80	2410	80	2230	86	98	40	80	3630	81	2980	82	2780	82	2590	83	2400	88	100
45	81	3810	82	3140	83	2930	83	2720	83	2530	88	99	45	78	3560	79	2920	80	2720	80	2530	81	2340	86	98	45	81	3810	82	3140	83	2930	83	2720	83	2530	88	99
50	82	4010	83	3310	83	3080	84	2870	84	2670	88	99	50	79	3730	80	3070	81	2860	81	2660	82	2460	86	97	50	82	4010	83	3310	83	3080	84	2870	84	2670	88	99

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS		
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST			V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-30	97	4530	100	3640	101	3380	101	3150	102	2930	107	117	-30	96	4360	99	3510	99	3260	100	3050	100	2840	106	116
-25	97	4630	100	3720	101	3450	101	3210	102	3000	107	117	-25	96	4450	99	3580	99	3330	100	3110	100	2900	106	116
-20	97	4720	100	3800	101	3530	101	3280	102	3060	107	117	-20	95	4550	99	3660	99	3400	100	3180	100	2960	106	116
-15	96	4820	99	3890	100	3600	101	3340	102	3120	107	117	-15	95	4640	98	3740	99	3470	100	3230	100	3020	106	116
-10	96	4910	99	3970	100	3680	101	3410	102	3180	107	117	-10	95	4730	98	3810	99	3540	100	3300	100	3080	106	116
-5	96	5010	99	4050	100	3760	101	3480	102	3240	107	117	-5	95	4820	98	3890	99	3610	100	3360	100	3140	106	116
0	96	5120	99	4140	100	3850	101	3570	102	3310	107	117	0	95	4930	98	3990	99	3700	100	3430	100	3200	106	116
5	96	5270	99	4260	100	3960	101	3670	102	3400	107	117	5	95	5060	98	4100	99	3810	100	3530	101	3290	106	116
10	96	5440	99	4410	100	4090	101	3800	102	3520	107	117	10	95	5230	98	4230	99	3940	100	3650	101	3390	105	116
15	97	5750	100	4640	101	4310	102	4000	103	3710	107	116	15	96	5510	99	4460	100	4140	101	3850	101	3570	105	115
20	98	6080	101	4900	102	4550	102	4230	103	3920	106	116	20	97	5820	100	4700	100	4370	101	4060	102	3760	105	115
25	99	6460	101	5200	102	4830	103	4480	104	4150	106	116	25	98	6180	100	4990	101	4630	102	4300	103	3990	105	115
30	99	6880	102	5540	103	5140	104	4770	104	4420	106	116	30	98	6580	101	5300	102	4930	103	4570	103	4240	105	115
35	100	7360	103	5910	104	5480	104	5080	105	4710	106	116	35	99	7030	102	5650	103	5250	103	4870	104	4510	105	115
40	101	7900	104	6320	104	5860	105	5430	105	5030	106	116	40	100	7530	103	6040	103	5610	104	5200	104	4820	105	115
45	102	8540	104	6780	105	6290	106	5820	106	5390	106	116	45	101	8100	103	6480	104	6010	104	5570	105	5160	105	115
47	102	9060	105	6990	105	6470	106	5990	106	5550	106	116	47	102	8480	104	6770	104	6270	105	5810	105	5390	105	115
48	102	9310	105	7090	105	6570	106	6080	106	5650	106	116													

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			KIAS	FT	KIAS	FT	KIAS	FT	KIAS									
-30	94	4110	97	3320	97	3100	98	2890	98	2690	104	114	-30	92	3870	94	3150	95	2940	96	2740	96	2550	102	113
-25	94	4190	97	3380	97	3170	98	2950	98	2750	104	114	-25	92	3950	94	3210	95	3000	96	2800	96	2600	102	113
-20	94	4270	97	3450	97	3220	98	3010	98	2800	104	114	-20	92	4020	94	3270	95	3060	95	2850	96	2650	102	113
-15	93	4360	97	3520	97	3280	98	3070	98	2860	104	114	-15	92	4100	94	3330	95	3120	95	2910	96	2710	102	113
-10	93	4440	96	3590	97	3340	98	3130	98	2920	104	114	-10	92	4180	94	3390	95	3180	95	2960	96	2760	102	113
-5	93	4520	96	3660	97	3400	98	3190	98	2970	104	114	-5	91	4250	94	3450	95	3230	95	3020	96	2810	102	113
0	93	4620	96	3740	97	3480	98	3250	98	3040	104	114	0	91	4340	94	3520	95	3290	95	3080	96	2880	102	113
5	93	4740	96	3840	97	3570	98	3330	98	3110	104	114	5	91	4450	94	3610	95	3370	96	3160	96	2950	102	113
10	93	4890	96	3960	97	3680	98	3430	98	3200	104	114	10	92	4580	95	3720	95	3470	96	3250	96	3030	102	112
15	94	5150	97	4170	98	3880	99	3600	99	3360	104	114	15	92	4810	95	3890	96	3620	96	3390	97	3170	102	112
20	95	5430	98	4390	99	4080	99	3800	100	3530	104	114	20	93	5060	96	4100	97	3810	97	3550	98	3320	102	112
25	96	5760	98	4650	99	4320	100	4020	101	3720	104	114	25	94	5360	97	4340	97	4030	98	3740	98	3500	102	112
30	97	6120	99	4940	100	4590	101	4260	101	3950	104	114	30	95	5690	97	4600	98	4270	99	3970	99	3700	102	112
35	97	6520	100	5260	101	4880	101	4530	102	4200	104	114	35	96	6050	98	4890	99	4540	99	4220	100	3910	102	112
40	98	6970	101	5610	101	5210	102	4830	102	4480	104	114	40	96	6460	99	5210	99	4840	100	4490	101	4170	102	112
45	99	7480	101	6010	102	5580	103	5170	103	4790	104	114	45	97	6910	99	5570	100	5170	101	4800	101	4450	102	112
48	100	7820	102	6270	102	5820	103	5390	103	5000	104	114	48	98	7210	100	5800	100	5390	101	5000	101	4640	102	112

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	
-30	90 3640	92 2990	93 2790	93 2600	94 2410	100 112			-30	89 3490	90 2830	90 2640	91 2450	92 2280	98 110				
-25	90 3710	92 3050	93 2840	93 2650	94 2460	100 112			-25	89 3550	90 2890	90 2690	91 2500	91 2320	98 110				
-20	90 3780	92 3100	93 2900	93 2700	94 2510	100 112			-20	89 3600	90 2940	90 2740	91 2550	91 2370	98 110				
-15	90 3850	92 3160	93 2950	93 2750	94 2560	100 112			-15	88 3660	90 2990	90 2790	91 2600	91 2420	98 110				
-10	90 3920	92 3220	93 3010	93 2810	94 2610	100 112			-10	88 3740	90 3040	90 2850	91 2650	91 2470	98 110				
-5	90 3990	92 3270	93 3060	93 2860	94 2660	100 112			-5	88 3810	90 3100	90 2900	91 2700	91 2510	98 110				
0	90 4080	92 3340	93 3120	93 2920	94 2720	100 112			0	88 3870	90 3160	90 2950	91 2760	91 2570	98 110				
5	90 4180	92 3410	93 3200	93 2990	94 2790	100 111			5	88 3920	90 3230	90 3020	91 2820	92 2630	98 110				
10	90 4300	93 3500	93 3290	94 3070	94 2870	100 111			10	88 4040	90 3320	91 3100	91 2900	92 2700	98 110				
15	90 4500	93 3650	94 3420	94 3200	95 2990	100 111			15	88 4210	91 3460	91 3240	92 3020	92 2820	98 109				
20	91 4720	94 3820	94 3570	95 3350	95 3120	100 110			20	89 4410	91 3600	92 3370	92 3150	93 2940	98 109				
25	92 4990	94 4040	95 3760	96 3520	96 3290	100 110			25	90 4640	92 3770	93 3540	93 3310	94 3090	98 109				
30	93 5280	95 4280	96 3980	96 3720	97 3470	100 110			30	91 4910	93 3980	94 3730	94 3490	94 3260	98 109				
35	94 5620	96 4540	97 4220	97 3930	98 3670	100 110			35	92 5210	94 4220	94 3940	95 3690	95 3440	98 109				
40	95 5980	97 4840	97 4500	98 4170	98 3890	100 110			40	93 5540	95 4490	95 4170	96 3900	96 3650	98 108				
45	95 6390	97 5160	98 4800	99 4450	99 4140	100 110			45	93 5910	95 4780	96 4450	96 4140	97 3870	98 108				
48	96 6660	98 5370	98 5000	99 4640	99 4300	100 110			48	94 6150	96 4980	96 4630	97 4300	97 4020	98 108				

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS									
VENR = 160 KIAS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2			TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2		
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-30	89 3480	89 2770	89 2550	89 2340	89 2150	97	109			-30	89 3470	89 2770	89 2550	89 2340	89 2140	95	108		
-25	89 3530	89 2820	89 2600	89 2380	89 2190	97	109			-25	89 3520	89 2810	89 2590	89 2380	89 2180	95	108		
-20	89 3590	89 2870	89 2640	89 2430	89 2240	97	109			-20	89 3580	89 2860	89 2640	89 2430	89 2220	95	108		
-15	89 3640	89 2920	89 2690	89 2480	89 2280	97	109			-15	89 3630	89 2910	89 2690	89 2470	89 2270	95	108		
-10	89 3700	89 2960	89 2740	89 2520	89 2330	97	109			-10	89 3690	89 2960	89 2730	89 2520	89 2310	95	108		
-5	89 3760	89 3010	89 2780	89 2560	89 2370	97	109			-5	89 3740	89 3010	89 2780	89 2560	89 2350	95	108		
0	88 3810	88 3050	88 2820	88 2610	89 2420	97	109			0	89 3780	89 3050	89 2820	89 2600	89 2390	95	108		
5	88 3850	88 3080	88 2850	88 2670	89 2480	97	109			5	88 3810	88 3070	88 2840	88 2620	88 2410	95	107		
10	87 3870	88 3130	88 2930	89 2740	89 2550	97	109			10	87 3830	87 3080	87 2850	87 2630	87 2420	95	107		
15	86 3950	88 3260	89 3050	89 2850	90 2650	96	108			15	85 3790	86 3070	86 2880	87 2680	88 2500	95	107		
20	87 4120	89 3400	90 3180	90 2970	91 2770	96	108			20	85 3860	87 3200	87 2990	88 2790	88 2600	94	106		
25	88 4320	90 3550	90 3330	91 3110	91 2900	96	107			25	86 4040	87 3350	88 3130	88 2920	89 2720	94	106		
30	89 4560	91 3740	91 3500	91 3270	92 3050	96	107			30	86 4240	88 3500	88 3280	89 3060	89 2850	94	105		
35	90 4830	92 3940	92 3690	92 3450	93 3220	96	107			35	87 4480	89 3690	89 3450	90 3220	90 3000	94	105		
40	90 5130	92 4170	93 3900	93 3650	94 3410	96	107			40	88 4750	90 3900	90 3650	91 3410	91 3180	94	105		
45	91 5470	93 4430	94 4140	94 3870	94 3620	96	107			45	89 5050	91 4130	91 3870	92 3610	92 3370	94	105		
48	92 5680	94 4600	94 4290	95 4020	95 3750	96	107			48	90 5250	91 4280	92 4010	92 3750	92 3490	94	105		

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS									
VENR = 160 KIAS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2			TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR	V2		
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-30	90 3470	90 2770	90 2550	90 2340	90 2140	95	108			-30	90 3470	90 2770	90 2550	90 2350	90 2150	96	109		
-25	89 3520	89 2810	89 2600	89 2390	89 2180	95	108			-25	90 3520	90 2820	90 2600	90 2390	90 2190	96	109		
-20	89 3570	89 2860	89 2640	89 2430	89 2230	95	108			-20	90 3570	90 2870	90 2650	90 2440	90 2230	96	109		
-15	89 3630	89 2910	89 2690	89 2470	89 2270	95	108			-15	90 3630	90 2910	90 2690	90 2480	90 2280	96	109		
-10	89 3680	89 2960	89 2730	89 2520	89 2310	95	108			-10	90 3680	90 2960	90 2740	90 2520	90 2320	96	109		
-5	89 3730	89 3010	89 2780	89 2560	89 2350	95	108			-5	90 3730	90 3010	90 2780	90 2570	90 2360	96	109		
0	89 3770	89 3040	89 2820	89 2600	89 2390	95	108			0	89 3770	89 3040	89 2820	89 2600	89 2390	95	109		
5	88 3800	88 3070	88 2840	88 2620	88 2410	94	107			5	89 3800	89 3070	89 2840	89 2620	89 2410	95	108		
10	88 3820	88 3080	88 2850	88 2630	88 2410	93	105			10	88 3810	88 3080	88 2850	88 2630	88 2420	94	107		
15	86 3770	86 3030	86 2800	86 2580	86 2370	93	105			15	86 3760	86 3030	86 2800	86 2580	86 2370	91	105		
20	84 3730	84 3010	85 2820	85 2630	86 2440	93	105			20	84 3710	84 2980	84 2750	84 2540	84 2330	91	103		
25	83 3800	85 3140	85 2940	86 2740	86 2550	92	104			25	82 3660	82 2950	83 2760	83 2570	84 2390	91	103		
30	84 3970	86 3290	86 3080	86 2870	87 2670	92	104			30	81 3730	83 3080	83 2880	84 2690	84 2500	90	102		
35	85 4160	86 3450	87 3220	87 3010	88 2800	92	103			35	82 3910	84 3230	84 3020	85 2810	85 2620	90	102		
40	86 4400	87 3640	88 3400	88 3180	88 2960	92	103			40	83 4100	84 3390	85 3170	85 2960	86 2750	90	101		
45	87 4670	88 3850	89 3600	89 3370	89 3130	92	103			45	84 4330	85 3590	86 3350	86 3130	87 2910	90	101		
48	87 4850	89 3990	89 3730	89 3490	90 3250	92	103			48	85 4480	86 3710	86 3470	87 3240	87 3010	90	101		

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS							
VENR = 160 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT					20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT			
-30	90 3470	90 2780	90 2570	90 2360	90 2160	96 110	-30	91 3490	91 2800	91 2580	91 2380	91 2180	97 112		
-25	90 3520	90 2830	90 2610	90 2400	90 2200	96 110	-25	91 3540	91 2840	91 2630	91 2420	91 2220	97 111		
-20	90 3580	90 2870	90 2660	90 2450	90 2240	96 110	-20	91 3590	91 2890	91 2670	91 2460	91 2260	97 111		
-15	90 3630	90 2920	90 2700	90 2490	90 2290	96 110	-15	90 3640	90 2940	90 2720	90 2510	90 2300	97 111		
-10	90 3680	90 2970	90 2750	90 2530	90 2330	96 110	-10	90 3700	90 2980	90 2760	90 2550	90 2340	97 111		
-5	90 3740	90 3020	90 2790	90 2580	90 2370	96 110	-5	90 3750	90 3030	90 2810	90 2590	90 2390	97 111		
0	90 3780	90 3050	90 2830	90 2610	90 2400	96 110	0	90 3790	90 3070	90 2840	90 2630	90 2420	97 111		
5	89 3800	89 3070	89 2850	89 2630	89 2420	95 109	5	89 3810	89 3090	89 2860	89 2640	89 2430	96 110		
10	88 3810	88 3080	88 2850	88 2640	88 2430	94 108	10	89 3820	89 3090	89 2860	89 2650	89 2440	95 109		
15	86 3760	86 3030	86 2800	86 2590	86 2380	92 106	15	87 3760	87 3030	87 2810	87 2590	87 2390	93 107		
20	84 3700	84 2980	84 2750	84 2540	84 2330	90 103	20	85 3700	85 2980	85 2760	85 2540	85 2330	90 104		
25	82 3640	82 2920	82 2690	82 2480	82 2270	88 101	25	82 3630	82 2920	82 2690	82 2480	82 2270	88 101		
30	80 3580	80 2890	81 2690	81 2510	82 2330	88 101	30	80 3570	80 2850	80 2630	80 2420	80 2210	86 99		
35	80 3660	81 3020	82 2820	82 2620	83 2440	88 100	35	78 3510	78 2810	79 2620	79 2440	80 2260	86 99		
40	80 3840	82 3170	82 2950	83 2750	83 2560	88 100	40	78 3580	79 2950	80 2750	80 2560	81 2370	86 98		
45	81 4030	83 3330	83 3110	83 2900	84 2690	88 99	45	79 3760	80 3100	80 2890	81 2690	81 2490	86 97		
48	82 4170	83 3450	84 3220	84 3000	84 2790	88 99	48	79 3880	80 3190	81 2980	81 2770	82 2570	86 97		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS				WEIGHT = 16000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2		
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST				V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	
-30	96	4680	100	3760	100	3490	101	3250	102	3030	107	117	-30	95	4500	98	3620	99	3360	100	3150	100	2930	106	116		
-25	96	4780	99	3850	100	3570	101	3320	102	3100	107	117	-25	95	4600	98	3710	99	3440	100	3210	100	2990	106	116		
-20	96	4880	99	3940	100	3650	101	3390	102	3160	107	117	-20	95	4690	98	3780	99	3510	100	3270	100	3050	106	116		
-15	96	4970	99	4020	100	3730	101	3460	102	3220	107	117	-15	95	4790	98	3860	99	3590	100	3340	100	3120	106	116		
-10	96	5070	99	4100	100	3810	101	3540	102	3290	107	117	-10	95	4880	98	3950	99	3670	100	3400	100	3180	106	116		
-5	95	5180	99	4190	100	3900	101	3610	101	3350	107	117	-5	94	4970	98	4030	99	3740	100	3480	100	3240	106	116		
0	96	5350	99	4330	100	4030	101	3740	102	3470	107	117	0	95	5140	98	4170	99	3870	100	3590	100	3340	106	116		
5	96	5550	99	4490	100	4180	101	3880	102	3600	107	117	5	95	5330	98	4320	99	4020	100	3730	101	3460	105	116		
10	97	5830	100	4720	101	4380	102	4070	102	3780	107	116	10	96	5590	99	4530	100	4210	100	3910	101	3630	105	116		
15	97	6180	100	4990	101	4640	102	4310	103	4000	106	116	15	96	5920	99	4790	100	4450	101	4140	102	3840	105	115		
20	98	6570	101	5300	102	4920	103	4570	104	4230	106	116	20	97	6290	100	5080	101	4720	102	4380	102	4070	105	115		
25	99	6990	102	5630	103	5230	103	4850	104	4500	106	116	25	98	6690	101	5390	102	5010	102	4650	103	4310	105	115		
30	100	7470	103	6000	103	5570	104	5170	105	4790	106	116	30	99	7140	102	5740	102	5330	103	4950	104	4590	105	115		
35	101	8000	103	6410	104	5940	105	5510	105	5110	106	116	35	100	7630	102	6130	103	5690	104	5280	104	4890	105	115		
40	101	8820	104	6870	105	6360	105	5900	106	5460	106	116	40	101	8190	103	6560	104	6080	104	5640	105	5230	105	115		
43	100	9620	104	7170	105	6640	106	6150	106	5700	106	116	45	101	8960	104	7040	104	6530	105	6050	105	5610	105	115		
45	100	0	105	7390	105	6840	106	6330	106	5860	106	116	46	101	9230	104	7150	104	6630	105	6140	105	5700	105	115		

WEIGHT = 15500 LBS							VENR = 160 KIAS							WEIGHT = 15000 LBS							VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S											
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS					FT	KIAS	KIAS	FT	KIAS	FT	KIAS					FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS								
-30	94	4240	97	3420	97	3200	98	2990	98	2780	104	114	-30	92	3990	94	3250	95	3030	95	2830	96	2630	102	113	-30	92	3990	94	3250	95	3030	95	2830	96	2630	102	113
-25	93	4330	96	3490	97	3260	98	3050	98	2840	104	114	-25	92	4070	94	3310	95	3100	95	2890	96	2690	102	113	-25	92	4070	94	3310	95	3100	95	2890	96	2690	102	113
-20	93	4410	96	3560	97	3320	98	3110	98	2900	104	114	-20	91	4150	94	3370	95	3160	95	2950	96	2740	102	113	-20	91	4150	94	3370	95	3160	95	2950	96	2740	102	113
-15	93	4500	96	3640	97	3390	97	3170	98	2960	104	114	-15	91	4230	94	3430	95	3220	95	3000	96	2800	102	113	-15	91	4230	94	3430	95	3220	95	3000	96	2800	102	113
-10	93	4590	96	3710	97	3450	98	3230	98	3020	104	114	-10	91	4310	94	3490	95	3270	95	3060	96	2860	102	113	-10	91	4310	94	3490	95	3270	95	3060	96	2860	102	113
-5	93	4670	96	3790	97	3520	97	3290	98	3070	104	114	-5	91	4390	94	3560	95	3330	95	3120	96	2910	102	113	-5	91	4390	94	3560	95	3330	95	3120	96	2910	102	113
0	93	4820	96	3910	97	3630	98	3380	98	3160	104	114	0	91	4520	94	3670	95	3430	95	3210	96	3000	102	113	0	91	4520	94	3670	95	3430	95	3210	96	3000	102	113
5	93	4980	96	4040	97	3760	98	3490	98	3260	104	114	5	91	4670	94	3790	95	3530	96	3310	96	3090	102	113	5	91	4670	94	3790	95	3530	96	3310	96	3090	102	113
10	94	5220	97	4230	98	3940	98	3660	99	3410	104	114	10	92	4870	95	3950	96	3680	96	3440	97	3210	102	112	10	92	4870	95	3950	96	3680	96	3440	97	3210	102	112
15	95	5520	97	4470	98	4160	99	3870	100	3590	104	114	15	93	5140	96	4170	96	3890	97	3610	97	3380	102	112	15	93	5140	96	4170	96	3890	97	3610	97	3380	102	112
20	95	5850	98	4730	99	4400	100	4090	100	3790	104	114	20	94	5440	96	4410	97	4100	98	3820	98	3560	102	112	20	94	5440	96	4410	97	4100	98	3820	98	3560	102	112
25	96	6210	99	5020	100	4670	100	4330	101	4020	104	114	25	94	5770	97	4670	98	4350	98	4040	99	3760	102	112	25	94	5770	97	4670	98	4350	98	4040	99	3760	102	112
30	97	6610	100	5340	100	4960	101	4610	102	4270	104	114	30	95	6140	98	4960	98	4610	99	4290	100	3980	102	112	30	95	6140	98	4960	98	4610	99	4290	100	3980	102	112
35	98	7080	100	5690	101	5280	102	4900	102	4550	104	114	35	96	6530	98	5280	99	4910	100	4560	100	4230	102	112	35	96	6530	98	5280	99	4910	100	4560	100	4230	102	112
40	99	7560	101	6070	102	5640	102	5240	103	4850	104	114	40	97	6980	99	5630	100	5230	100	4860	101	4510	102	112	40	97	6980	99	5630	100	5230	100	4860	101	4510	102	112
45	100	8130	102	6510	102	6050	103	5610	103	5200	104	114	45	98	7490	100	6030	100	5600	101	5200	101	4820	102	112	45	98	7490	100	6030	100	5600	101	5200	101	4820	102	112
46	100	8250	102	6610	102	6130	103	5690	103	5270	104	114	46	98	7600	100	6110	101	5680	101	5270	101	4890	102	112	46	98	7600	100	6110	101	5680	101	5270	101	4890	102	112

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7⁰
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST												
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT										
-30	89	3600	89	2880	89	2650	89	2440	89	2230	97 109	-30	89	3590	89	2870	89	2650	89	2440	89	2230	95 108																
-25	89	3650	89	2920	89	2700	89	2480	89	2270	97 109	-25	89	3640	89	2920	89	2700	89	2480	89	2270	95 108																
-20	89	3710	89	2980	89	2750	89	2530	89	2320	97 109	-20	89	3700	89	2970	89	2740	89	2530	89	2320	95 108																
-15	89	3780	89	3030	89	2800	89	2580	89	2370	97 109	-15	89	3750	89	3020	89	2790	89	2570	89	2360	95 108																
-10	89	3850	89	3070	89	2840	89	2620	89	2410	97 109	-10	89	3810	89	3070	89	2840	89	2620	89	2410	95 108																
-5	89	3920	89	3120	89	2890	89	2670	89	2460	97 109	-5	89	3870	89	3120	89	2880	89	2660	89	2450	95 108																
0	88	3940	88	3140	88	2900	88	2710	89	2520	97 109	0	88	3890	88	3130	88	2900	88	2670	88	2460	95 107																
5	87	3950	88	3190	88	2990	89	2790	89	2600	97 109	5	87	3890	87	3130	87	2900	87	2680	87	2460	95 107																
10	86	4000	88	3310	89	3100	89	2890	90	2700	96 108	10	86	3860	86	3120	86	2920	87	2720	87	2540	95 107																
15	87	4190	89	3450	89	3230	90	3020	90	2820	96 108	15	85	3920	86	3250	87	3040	88	2840	88	2650	95 106																
20	88	4390	90	3610	90	3380	91	3160	91	2950	96 107	20	86	4100	87	3400	88	3180	88	2970	89	2770	94 106																
25	88	4620	90	3780	91	3550	91	3320	92	3090	96 107	25	86	4300	88	3550	88	3330	89	3110	89	2900	94 105																
30	89	4890	91	3980	92	3740	92	3500	93	3270	96 107	30	87	4530	89	3730	89	3500	90	3270	90	3050	94 105																
35	90	5190	92	4210	93	3950	93	3690	93	3450	96 107	35	88	4800	90	3940	90	3690	90	3450	91	3220	94 105																
40	91	5520	93	4470	93	4170	94	3910	94	3650	96 107	40	89	5100	91	4160	91	3900	91	3650	92	3410	94 105																
45	92	5880	94	4770	94	4440	95	4150	95	3880	96 107	45	90	5430	92	4410	92	4140	92	3870	92	3610	94 105																
46	92	5960	94	4830	94	4500	95	4210	95	3930	96 107	46	90	5500	92	4470	92	4190	92	3920	93	3660	94 105																

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-30	90	3580	90	2870	90	2650	90	2440	90	2240	96	109	-30	90	3580	90	2870	90	2660	90	2450	90	2240	96	110														
-25	90	3640	90	2920	90	2700	90	2480	90	2280	96	109	-25	90	3630	90	2920	90	2700	90	2490	90	2280	96	110														
-20	90	3690	90	2970	90	2740	90	2530	90	2320	96	109	-20	90	3690	90	2970	90	2750	90	2540	90	2330	96	110														
-15	90	3750	90	3020	90	2790	90	2580	90	2370	96	109	-15	90	3750	90	3020	90	2800	90	2580	90	2370	96	110														
-10	89	3800	89	3070	89	2840	89	2620	89	2410	95	109	-10	90	3800	90	3070	90	2840	90	2630	90	2420	96	110														
-5	89	3850	89	3110	89	2880	89	2660	89	2450	95	109	-5	90	3850	90	3120	90	2890	90	2670	90	2460	96	110														
0	88	3870	88	3120	88	2890	88	2670	88	2460	94	108	0	89	3860	89	3130	89	2900	89	2680	89	2460	95	109														
5	87	3870	87	3130	87	2900	87	2670	87	2460	93	106	5	88	3860	88	3130	88	2900	88	2670	88	2460	94	107														
10	86	3840	86	3100	86	2870	86	2650	86	2430	93	105	10	86	3830	86	3090	86	2860	86	2640	86	2430	92	105														
15	84	3800	84	3060	84	2860	85	2670	86	2480	93	105	15	84	3780	84	3040	84	2810	84	2590	84	2380	91	103														
20	83	3850	85	3190	85	2990	86	2790	86	2590	92	104	20	82	3730	82	3000	83	2800	83	2610	84	2430	91	103														
25	84	4020	85	3340	86	3120	86	2910	87	2710	92	104	25	81	3780	83	3130	83	2920	84	2730	84	2540	90	102														
30	85	4210	86	3490	87	3270	87	3050	87	2850	92	103	30	82	3950	84	3270	84	3060	85	2860	85	2660	90	102														
35	86	4440	87	3680	87	3440	88	3210	88	3000	92	103	35	83	4140	84	3430	85	3210	85	2990	86	2790	90	101														
40	87	4710	88	3880	88	3640	89	3400	89	3170	92	103	40	84	4360	85	3620	86	3380	86	3160	86	2940	90	101														
45	87	5010	89	4110	89	3850	90	3600	90	3360	92	103	45	85	4620	86	3830	87	3580	87	3350	87	3120	90	101														
46	88	5070	89	4160	89	3900	90	3650	90	3400	92	103	46	85	4670	86	3870	87	3630	87	3390	87	3150	90	101														

WEIGHT = 11500 LBS										VENR = 160 KIAS				WEIGHT = 11000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS								
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS										
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-30	91 3590	91 2880	91 2670	91 2460	91 2250	97 111		-30	91 3600	91 2900	91 2680	91 2470	91 2270	98 112													
-25	90 3640	90 2930	90 2710	90 2500	90 2300	97 111		-25	91 3650	91 2950	91 2730	91 2520	91 2310	98 112													
-20	90 3700	90 2980	90 2760	90 2550	90 2340	97 111		-20	91 3710	91 3000	91 2780	91 2560	91 2360	98 112													
-15	90 3750	90 3030	90 2810	90 2590	90 2380	97 111		-15	91 3770	91 3050	91 2820	91 2610	91 2400	98 112													
-10	90 3800	90 3080	90 2850	90 2640	90 2430	97 111		-10	91 3820	91 3090	91 2870	91 2650	91 2440	98 112													
-5	90 3860	90 3120	90 2900	90 2680	90 2470	97 111		-5	90 3870	90 3140	90 2910	90 2690	90 2480	98 112													
0	89 3870	89 3130	89 2900	89 2680	89 2470	96 110		0	90 3870	90 3140	90 2920	90 2700	90 2490	97 111													
5	88 3860	88 3130	88 2900	88 2680	88 2470	95 108		5	88 3870	88 3140	88 2910	88 2690	88 2480	95 109													
10	86 3830	86 3090	86 2870	86 2650	86 2440	92 106		10	87 3830	87 3100	87 2870	87 2660	87 2440	93 107													
15	84 3770	84 3040	84 2810	84 2590	84 2380	90 103		15	85 3770	85 3040	85 2810	85 2600	85 2390	90 104													
20	82 3710	82 2980	82 2750	82 2540	82 2330	88 101		20	83 3700	83 2980	83 2750	83 2540	83 2330	88 101													
25	80 3660	80 2930	81 2730	81 2550	82 2370	88 101		25	80 3640	80 2920	80 2690	80 2480	80 2270	86 99													
30	79 3700	81 3060	81 2860	82 2660	82 2480	88 100		30	78 3580	78 2860	79 2660	79 2480	80 2300	86 99													
35	80 3880	82 3200	82 2990	83 2790	83 2590	88 100		35	77 3620	79 2980	79 2780	80 2590	80 2410	86 98													
40	81 4070	82 3360	83 3140	83 2930	84 2720	88 99		40	78 3790	80 3130	80 2920	81 2720	81 2520	86 98													
45	82 4290	83 3550	84 3320	84 3100	85 2880	88 99		45	79 3980	80 3290	81 3070	81 2860	82 2650	86 97													
46	82 4340	84 3590	84 3360	84 3130	85 2910	88 99		46	79 4030	81 3320	81 3100	81 2890	82 2690	86 97													

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS										
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS	20 KTS	30 KTS								10 KTS	20 KTS	30 KTS				
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	96 4700	99 3790	100 3520	101 3270	101 3050	107 117			-35	95 4530	98 3650	99 3390	100 3170	100 2960	106 116				
-30	96 4810	99 3880	100 3600	101 3340	101 3120	107 117			-30	95 4630	98 3740	99 3470	100 3230	100 3020	106 116				
-25	96 4920	99 3970	100 3690	101 3420	101 3190	107 117			-25	95 4730	98 3820	99 3550	100 3300	100 3090	106 116				
-20	95 5030	99 4070	100 3780	101 3500	101 3260	107 117			-20	94 4840	98 3920	99 3640	100 3370	100 3150	106 116				
-15	95 5160	99 4170	100 3880	101 3600	101 3340	107 117			-15	94 4960	98 4020	99 3730	99 3460	100 3230	106 116				
-10	96 5320	99 4310	100 4010	101 3720	102 3440	107 117			-10	94 5110	98 4140	99 3850	100 3570	100 3320	106 116				
-5	96 5500	99 4450	100 4140	101 3850	102 3560	107 117			-5	95 5280	98 4280	99 3980	100 3690	101 3430	106 116				
0	96 5720	99 4630	100 4310	101 4000	102 3720	107 117			0	95 5490	98 4450	99 4140	100 3850	101 3570	105 116				
5	96 5960	100 4820	101 4490	101 4170	102 3870	107 116			5	95 5720	99 4630	99 4310	100 4000	101 3720	105 116				
10	97 6310	100 5100	101 4740	102 4400	103 4090	106 116			10	96 6050	99 4890	100 4550	101 4230	102 3920	105 115				
15	98 6690	101 5400	102 5020	103 4660	103 4320	106 116			15	97 6410	100 5180	101 4820	101 4470	102 4150	105 115				
20	99 7120	102 5740	102 5330	103 4950	104 4590	106 116			20	98 6810	101 5490	101 5110	102 4740	103 4400	105 115				
25	100 7590	102 6110	103 5670	104 5260	104 4880	106 116			25	99 7250	101 5840	102 5430	103 5040	103 4670	105 115				
30	100 8120	103 6520	104 6050	104 5610	105 5200	106 116			30	99 7750	102 6230	103 5780	103 5360	104 4970	105 115				
35	100 9140	104 6970	104 6460	105 5990	106 5550	106 116			35	100 8300	103 6660	103 6170	104 5730	104 5310	105 115				
40	99 0	104 7490	105 6930	106 6420	106 5950	106 116			40	100 9290	103 7140	104 6620	104 6130	105 5680	105 115				
41	99 0	105 7600	105 7040	106 6520	106 6030	106 116			41	100 9570	103 7240	104 6710	105 6220	105 5760	105 115				
									44	99 0	104 7570	104 7010	105 6500	105 6050	105 115				

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS	20 KTS	30 KTS								10 KTS	20 KTS	30 KTS				
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	93 4270	96 3440	97 3220	97 3010	98 2800	104 114				-35	91 4010	94 3270	95 3060	95 2850	96 2650	102 113			
-30	93 4360	96 3520	97 3290	97 3080	98 2870	104 114				-30	91 4100	94 3330	95 3120	95 2910	96 2710	102 113			
-25	93 4450	96 3600	97 3360	97 3140	98 2930	104 114				-25	91 4190	94 3400	95 3190	95 2980	96 2770	102 113			
-20	93 4550	96 3680	97 3420	97 3200	98 2990	104 114				-20	91 4280	94 3470	95 3250	95 3040	96 2830	102 113			
-15	93 4660	96 3780	97 3510	97 3280	98 3070	104 114				-15	91 4380	94 3550	95 3320	95 3110	96 2900	102 113			
-10	93 4790	96 3890	97 3610	98 3370	98 3150	104 114				-10	91 4500	94 3650	95 3410	95 3200	96 2980	102 113			
-5	93 4940	96 4010	97 3730	98 3460	98 3240	104 114				-5	91 4630	94 3760	95 3500	96 3280	96 3070	102 113			
0	93 5130	96 4160	97 3870	98 3600	99 3350	104 114				0	91 4800	94 3900	95 3630	96 3390	96 3170	102 112			
5	94 5330	97 4330	97 4030	98 3740	99 3480	104 114				5	92 4980	95 4040	96 3760	96 3510	97 3280	102 112			
10	94 5630	97 4570	98 4250	99 3950	100 3660	104 114				10	93 5250	95 4260	96 3970	97 3680	97 3440	102 112			
15	95 5960	98 4830	99 4490	100 4170	100 3870	104 114				15	93 5540	96 4500	97 4180	98 3890	98 3620	102 112			
20	96 6320	99 5110	99 4750	100 4420	101 4100	104 114				20	94 5870	97 4760	98 4430	98 4120	99 3820	102 112			
25	97 6720	99 5430	100 5050	101 4690	101 4350	104 114				25	95 6230	97 5040	98 4690	99 4360	100 4050	102 112			
30	98 7160	100 5780	101 5370	101 4980	102 4620	104 114				30	96 6620	98 5360	99 4980	99 4630	100 4300	102 112			
35	98 7660	101 6160	101 5720	102 5310	103 4930	104 114				35	97 7070	99 5710	99 5310	100 4930	101 4570	102 112			
40	99 8220	101 6600	102 6120	103 5680	103 5270	104 114				40	97 7570	100 6100	100 5670	101 5260	101 4880	102 112			
44	100 8720	102 6980	103 6480	103 6010	103 5580	104 114				44	98 8020	100 6450	101 5990	101 5560	102 5160	102 112			

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2												
	10 KTS				10 KTS						10 KTS				10 KTS					10 KTS											
	V1 DIST		V1 DIST		V1 DIST		V1 DIST				V1 DIST		V1 DIST		V1 DIST		V1 DIST			V1 DIST		V1 DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	90	3780	92	3100	92	2900	93	2700	93	2510	100	112	-35	90	3710	90	2950	90	2740	90	2560	91	2370	98	111						
-30	89	3850	92	3170	92	2960	93	2760	93	2570	100	112	-30	89	3780	89	3000	90	2800	90	2610	91	2430	98	111						
-25	89	3940	92	3230	92	3020	93	2820	93	2620	100	112	-25	89	3850	89	3060	90	2860	90	2660	91	2480	98	111						
-20	89	4020	92	3290	92	3080	93	2880	93	2680	100	112	-20	89	3930	89	3110	90	2910	90	2720	91	2530	98	110						
-15	89	4110	92	3360	92	3150	93	2940	93	2750	100	112	-15	89	3980	89	3180	90	2980	91	2780	91	2590	98	110						
-10	89	4220	92	3450	93	3230	93	3020	94	2820	100	112	-10	88	4020	90	3270	90	3060	91	2860	91	2660	98	110						
-5	89	4350	92	3540	93	3320	93	3110	94	2900	100	111	-5	88	4080	90	3350	90	3140	91	2940	92	2740	98	110						
0	90	4500	93	3660	93	3430	94	3210	94	3000	100	111	0	88	4220	90	3460	91	3240	91	3030	92	2830	98	110						
5	90	4660	93	3790	94	3540	94	3320	94	3100	100	111	5	88	4360	91	3570	91	3350	92	3130	92	2920	98	109						
10	91	4890	93	3970	94	3700	95	3460	95	3240	100	110	10	89	4560	91	3720	92	3490	92	3270	93	3050	98	109						
15	91	5150	94	4190	95	3900	95	3640	96	3410	100	110	15	89	4790	92	3900	92	3650	93	3420	93	3190	98	109						
20	92	5450	95	4420	96	4120	96	3830	97	3590	100	110	20	90	5060	93	4110	93	3840	94	3600	94	3360	98	109						
25	93	5770	95	4680	96	4360	97	4050	97	3780	100	110	25	91	5350	93	4350	94	4050	94	3790	95	3540	98	109						
30	94	6140	96	4970	97	4620	97	4300	98	3990	100	110	30	92	5680	94	4610	95	4290	95	4000	96	3740	98	108						
35	95	6530	97	5290	97	4920	98	4570	99	4240	100	110	35	93	6040	95	4900	95	4560	96	4240	96	3960	98	108						
40	96	6980	98	5640	98	5250	99	4880	99	4520	100	110	40	94	6440	96	5220	96	4850	97	4510	97	4200	98	108						
44	96	7380	98	5960	98	5540	99	5140	100	4770	100	110	44	94	6790	96	5500	97	5120	97	4760	98	4420	98	108						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											WEIGHT = 13000 LBS														
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS																
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT															
-35	90	3670	90	2940	90	2720	90	2500	90	2290	97	109	-35	90	3660	90	2940	90	2720	90	2500	90	2300	96	109
-30	90	3730	90	2990	90	2770	90	2550	90	2340	97	109	-30	90	3720	90	2990	90	2760	90	2550	90	2340	96	109
-25	90	3800	90	3040	90	2810	90	2590	90	2380	97	109	-25	90	3770	90	3040	90	2810	90	2590	90	2380	96	109
-20	89	3870	89	3090	89	2860	89	2640	89	2420	97	109	-20	90	3830	90	3090	90	2860	90	2640	90	2420	95	108
-15	89	3930	89	3130	89	2900	89	2670	89	2460	97	109	-15	89	3880	89	3120	89	2890	89	2670	89	2460	95	108
-10	88	3960	88	3150	88	2920	88	2700	88	2510	97	109	-10	89	3910	89	3140	89	2910	89	2690	89	2470	95	108
-5	87	3990	87	3170	88	2970	89	2770	89	2580	97	109	-5	88	3930	88	3160	88	2930	88	2700	88	2490	95	107
0	86	3990	88	3270	88	3060	89	2860	89	2670	97	108	0	87	3930	87	3160	87	2920	87	2700	87	2510	95	107
5	86	4080	88	3370	89	3160	89	2950	90	2750	96	108	5	85	3920	86	3180	86	2980	87	2780	87	2590	95	107
10	87	4270	89	3510	89	3290	90	3080	90	2870	96	108	10	85	3990	86	3310	87	3100	87	2900	88	2700	95	106
15	87	4470	90	3660	90	3440	90	3220	91	3000	96	107	15	85	4170	87	3450	88	3240	88	3020	89	2820	94	106
20	88	4700	90	3840	91	3600	91	3370	92	3150	96	107	20	86	4370	88	3610	88	3380	89	3160	89	2950	94	105
25	89	4960	91	4040	92	3790	92	3550	92	3320	96	107	25	87	4600	89	3780	89	3550	89	3320	90	3090	94	105
30	90	5260	92	4270	92	4000	93	3740	93	3500	96	107	30	88	4860	89	3990	90	3740	90	3500	91	3260	94	105
35	91	5580	93	4530	93	4220	94	3960	94	3700	96	107	35	88	5160	90	4210	91	3950	91	3690	91	3450	94	105
40	91	5940	93	4820	94	4490	94	4190	95	3920	96	107	40	89	5480	91	4450	92	4180	92	3910	92	3650	94	105
44	92	6260	94	5080	94	4730	95	4410	95	4120	96	107	44	90	5770	92	4690	92	4380	92	4100	93	3830	94	105

WEIGHT = 12500 LBS											WEIGHT = 12000 LBS														
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS																
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT															
-35	90	3660	90	2940	90	2720	90	2510	90	2300	96	110	-35	91	3660	91	2950	91	2730	91	2510	91	2310	97	111
-30	90	3710	90	2990	90	2770	90	2550	90	2340	96	110	-30	91	3710	91	2990	91	2770	91	2560	91	2350	97	111
-25	90	3770	90	3040	90	2810	90	2590	90	2380	96	110	-25	90	3770	90	3040	90	2820	90	2600	90	2390	97	111
-20	90	3820	90	3090	90	2860	90	2640	90	2430	96	109	-20	90	3820	90	3090	90	2860	90	2640	90	2430	97	110
-15	90	3860	90	3120	90	2890	90	2670	90	2460	96	109	-15	90	3860	90	3120	90	2900	90	2680	90	2460	96	110
-10	89	3890	89	3140	89	2910	89	2690	89	2470	95	108	-10	89	3880	89	3140	89	2910	89	2690	89	2480	96	109
-5	88	3900	88	3160	88	2920	88	2700	88	2490	94	107	-5	88	3900	88	3160	88	2930	88	2700	88	2490	95	108
0	87	3900	87	3150	87	2920	87	2700	87	2480	93	106	0	87	3890	87	3150	87	2920	87	2700	87	2480	93	106
5	86	3900	86	3150	86	2910	86	2690	86	2470	93	105	5	86	3890	86	3140	86	2910	86	2690	86	2470	92	105
10	84	3850	84	3110	84	2910	85	2720	86	2530	93	105	10	84	3840	84	3090	84	2860	84	2640	84	2430	91	103
15	83	3910	85	3250	85	3040	86	2840	86	2640	92	104	15	82	3790	82	3050	83	2850	83	2660	84	2470	91	103
20	84	4070	85	3390	86	3170	86	2960	87	2760	92	104	20	81	3840	83	3180	83	2970	84	2770	84	2580	90	102
25	85	4270	86	3540	86	3320	87	3100	87	2890	92	103	25	82	4000	83	3320	84	3110	84	2900	85	2700	90	102
30	85	4500	87	3720	87	3490	88	3260	88	3040	92	103	30	83	4180	84	3470	85	3260	85	3040	85	2830	90	101
35	86	4760	88	3930	88	3680	88	3440	89	3210	92	103	35	84	4400	85	3660	85	3420	86	3200	86	2980	90	101
40	87	5060	89	4150	89	3890	89	3640	90	3400	92	103	40	85	4660	86	3860	86	3620	87	3380	87	3150	90	101
44	88	5320	89	4350	90	4080	90	3820	90	3560	92	103	44	85	4890	87	4050	87	3790	87	3540	88	3300	90	101

WEIGHT = 11500 LBS											WEIGHT = 11000 LBS														
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS																
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT															
-35	91	3670	91	2960	91	2740	91	2520	91	2320	98	112	-35	92	3680	92	2970	92	2750	92	2540	92	2340	99	113
-30	91	3720	91	3000	91	2780	91	2570	91	2360	98	112	-30	91	3740	91	3020	91	2800	91	2590	91	2380	98	113
-25	91	3770	91	3050	91	2830	91	2610	91	2400	98	112	-25	91	3790	91	3070	91	2840	91	2630	91	2420	98	113
-20	91	3830	91	3100	91	2870	91	2650	91	2440	97	111	-20	91	3840	91	3110	91	2890	91	2670	91	2460	98	113
-15	90	3860	90	3130	90	2910	90	2690	90	2470	97	111	-15	91	3880	91	3150	91	2920	91	2700	91	2490	98	112
-10	90	3880	90	3150	90	2920	90	2700	90	2490	96	110	-10	90	3900	90	3160	90	2940	90	2720	90	2500	97	111
-5	89	3900	89	3160	89	2930	89	2710	89	2500	95	109	-5	89	3910	89	3170	89	2940	89	2720	89	2510	96	110
0	87	3890	87	3150	87	2920	87	2700	87	2490	94	108	0	88	3890	88	3160	88	2930	88	2710	88	2500	95	109
5	86	3880	86	3140	86	2910	86	2690	86	2480	92	106	5	87	3880	87	3150	87	2920	87	2700	87	2490	93	107
10	84	3830	84	3090	84	2860	84	2640	84	2430	90	103	10	85	3820	85	3090	85	2860	85	2640	85	2430	91	104
15	82	3780	82	3040	82	2810	82	2590	82	2380	88	101	15	83	3770	83	3040	83	2810	83	2590	83	2380	88	101
20	80	3720	80	2990	81	2780	81	2590	82	2410	88	101	20	81	3710	81	2980	81	2750	81	2540	81	2330	86	99
25	79	3750	81	3100	81	2900	82	2710	82	2520	88	100	25	78	3650	78	2920	78	2710	79	2520	80	2340	86	99
30	80	3920	81	3250	82	3040	82	2830	83	2630	88	100	30	77	3660	79	3020	79	2820	80	2630	80	2440	86	98
35	81	4110	82	3400	83	3180	83	2970	83	2760	88	99	35	78	3830	79	3170	80	2960	80	2760	81	2560	86	98
40	82	4320	83	3590	84	3350	84	3130	84	2910	88	99	40	79	4020	80	3320	81	3110	81	2890	81	2690	86	97
44	83	4520	84	3750	84	3510	85	3280	85	3050	88	99	44	80	4190	81	3470	81	3240	82	3020	82	2810	86	97

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 15°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure S24-4 and correct for runway gradient and anti-icing requirements using the tables below.

If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 15°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT				
RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1^*	MULTIPLY DISTANCE BY	V_1^*	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.6 * *	ADD 4 KNOTS	1.6 * *
1% UPHILL	ADD 2 KNOTS	1.15	ADD 2 KNOTS	1.15
1% DOWNHILL	SUBTRACT 1 KNOT	1.0	NO CORRECTION	1.0
2% DOWNHILL	SUBTRACT 2 KNOTS	1.0	NO CORRECTION	1.05

CORRECTION FACTORS - ANTI-ICE ON	
V_1^* - KIAS	NO CORRECTION
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.14

- * If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .
- * * Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 5000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure S24-4, the Takeoff Field Length is 3580.

V_1 is 97 KNOTS
 V_R is 102 KNOTS
 V_2 is 112 KNOTS
 V_{ENR} is 160 KNOTS

Figure S24-3

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 160 KIAS									WEIGHT = 16000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS									
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS		10 KTS	20 KTS	30 KTS						
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						
-25	93	3970	96	3200	96	2980	97	2770	97	2560	102	112	-25	92	3830	94	3100	95	2890	95	2680	96	2480	101	111										
-20	93	4040	96	3260	96	3040	97	2830	97	2620	102	112	-20	92	3900	94	3160	95	2940	95	2730	96	2530	101	111										
-15	93	4120	96	3320	96	3100	97	2880	97	2670	102	112	-15	92	3970	94	3220	95	3000	95	2790	96	2580	101	111										
-10	93	4200	96	3380	96	3150	97	2930	97	2720	102	112	-10	92	4050	94	3270	95	3050	95	2840	96	2630	101	111										
-5	93	4280	96	3440	96	3210	97	2990	97	2770	102	112	-5	92	4120	94	3330	95	3110	95	2890	96	2680	101	111										
0	93	4360	96	3500	96	3270	96	3040	97	2830	102	112	0	92	4200	94	3390	95	3170	95	2950	96	2740	101	111										
5	93	4440	96	3560	96	3320	96	3100	97	2880	102	112	5	92	4270	94	3440	95	3220	95	3000	96	2790	101	111										
10	93	4520	95	3640	96	3380	96	3160	97	2940	102	112	10	91	4350	94	3500	95	3280	95	3050	96	2840	101	111										
15	92	4610	95	3710	96	3440	96	3210	97	2990	102	112	15	91	4430	94	3570	95	3330	95	3110	96	2890	101	111										
20	93	4720	95	3800	96	3530	97	3300	97	3070	102	112	20	91	4550	94	3660	95	3410	95	3190	96	2970	101	111										
25	93	4850	95	3900	96	3630	97	3370	97	3150	102	112	25	92	4670	94	3760	95	3500	95	3270	96	3040	101	111										
30	93	5100	96	4110	97	3810	98	3530	98	3300	102	112	30	92	4900	95	3950	96	3660	96	3420	97	3190	101	111										
35	94	5410	97	4350	98	4030	98	3740	99	3480	102	112	35	93	5200	96	4180	97	3880	97	3610	97	3370	101	111										
40	95	5770	98	4630	98	4290	99	3970	100	3690	102	112	40	94	5540	97	4450	97	4120	98	3820	98	3560	101	111										
45	96	6170	99	4940	99	4580	100	4240	100	3920	102	112	45	95	5910	97	4750	98	4400	99	4080	99	3790	101	111										
50	97	6620	99	5290	100	4910	101	4540	101	4200	102	112	50	96	6340	98	5080	99	4710	99	4360	100	4040	101	111										
52	98	6810	100	5440	100	5040	101	4670	101	4310	102	112	53	97	6610	99	5290	99	4900	100	4540	100	4190	101	111										
53	98	6910	100	5520	100	5110	101	4730	101	4370	102	112	54	97	6710	99	5360	99	4970	100	4600	100	4250	101	111										

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST		V1	DIST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1		DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST			
			KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT			
-25	88 3370	88 2660	88 2460	89 2280	89 2100	96 107	-25	88 3370	88 2660	88 2440	88 2230	88 2030	94 106		
-20	88 3420	88 2700	88 2500	89 2320	89 2140	96 107	-20	88 3420	88 2700	88 2480	88 2270	88 2070	94 106		
-15	88 3480	88 2750	88 2550	89 2370	89 2190	96 107	-15	88 3470	88 2750	88 2530	88 2310	88 2110	94 106		
-10	87 3530	87 2800	88 2600	89 2410	89 2230	96 107	-10	88 3520	88 2800	88 2570	88 2360	88 2150	94 106		
-5	87 3580	87 2840	88 2640	88 2460	89 2270	96 107	-5	88 3570	88 2840	88 2610	88 2400	88 2190	94 106		
0	87 3630	87 2890	88 2690	88 2500	89 2320	96 107	0	88 3620	88 2880	88 2660	88 2440	88 2230	94 106		
5	87 3680	87 2940	88 2740	88 2550	89 2360	96 107	5	87 3670	87 2930	87 2700	87 2480	87 2260	94 106		
10	87 3730	87 2990	88 2790	88 2590	89 2400	96 107	10	87 3720	87 2970	87 2740	87 2520	87 2300	94 106		
15	87 3790	87 3040	88 2830	88 2640	89 2450	96 107	15	87 3770	87 3010	87 2780	87 2560	87 2340	94 106		
20	87 3830	88 3100	88 2900	89 2700	89 2510	96 107	20	87 3790	87 3040	87 2800	87 2580	87 2370	94 106		
25	86 3860	88 3170	88 2960	89 2760	89 2570	96 107	25	86 3820	86 3060	86 2820	86 2610	87 2420	94 106		
30	87 4030	88 3300	89 3090	89 2870	90 2670	96 106	30	84 3790	86 3120	87 2920	87 2710	88 2520	94 105		
35	87 4250	89 3470	90 3240	90 3020	91 2810	96 106	35	85 3970	87 3270	87 3050	88 2840	88 2640	94 105		
40	88 4500	90 3670	91 3430	91 3200	92 2970	96 106	40	86 4200	88 3450	88 3220	89 3000	89 2790	94 105		
45	89 4790	91 3880	92 3630	92 3390	92 3150	96 106	45	87 4460	89 3650	89 3410	90 3180	90 2950	94 105		
50	90 5110	92 4120	93 3850	93 3600	93 3350	96 106	50	88 4760	90 3870	90 3620	91 3370	91 3140	94 105		
54	91 5380	93 4330	93 4050	94 3780	94 3510	96 106	54	89 5010	91 4060	91 3800	91 3540	92 3290	94 105		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS																
TEMP		TAILWIND		ZERO		H E A D W I N D S						TEMP		TAILWIND		ZERO		H E A D W I N D S								
DEG	C	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	VR	V2	DEG	C	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	VR	V2			
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-25		88	3370	88	2660	88	2440	88	2230	88	2030	92	105	-25	88	3370	88	2670	88	2450	88	2240	88	2050	91	103
-20		88	3420	88	2710	88	2490	88	2280	88	2070	92	105	-20	88	3420	88	2710	88	2500	88	2290	88	2090	91	103
-15		88	3470	88	2750	88	2530	88	2320	88	2110	92	105	-15	88	3470	88	2760	88	2540	88	2330	88	2130	91	103
-10		88	3520	88	2800	88	2580	88	2360	88	2160	92	105	-10	88	3520	88	2810	88	2580	88	2370	88	2170	91	103
-5		88	3570	88	2840	88	2620	88	2400	88	2190	92	105	-5	88	3570	88	2850	88	2630	88	2410	88	2200	91	103
0		88	3620	88	2890	88	2650	88	2440	88	2230	92	105	0	88	3620	88	2890	88	2670	88	2450	88	2240	91	103
5		88	3670	88	2930	88	2700	88	2480	88	2270	92	105	5	88	3670	88	2940	88	2710	88	2490	88	2280	91	103
10		88	3710	88	2970	88	2740	88	2520	88	2310	92	105	10	88	3720	88	2980	88	2750	88	2530	88	2320	91	103
15		88	3760	88	3020	88	2780	88	2560	88	2350	92	105	15	88	3770	88	3020	88	2790	88	2570	88	2360	91	103
20		87	3790	87	3040	87	2800	87	2580	87	2360	92	105	20	87	3790	87	3040	87	2810	87	2590	87	2370	91	103
25		86	3810	86	3060	86	2820	86	2600	86	2380	92	104	25	87	3810	87	3060	87	2830	87	2600	87	2390	91	103
30		85	3760	85	3010	85	2770	85	2560	85	2370	92	104	30	85	3760	85	3010	85	2780	85	2550	85	2340	90	103
35		83	3750	84	3090	85	2880	85	2680	86	2490	92	103	35	83	3680	83	2940	83	2720	83	2520	84	2340	90	102
40		84	3940	85	3240	86	3020	86	2810	87	2610	92	103	40	81	3710	83	3050	83	2840	84	2640	84	2450	90	101
45		85	4160	86	3430	87	3200	87	2980	88	2760	92	103	45	83	3910	84	3210	84	3000	85	2780	85	2580	90	101
50		86	4420	88	3630	88	3390	88	3160	89	2930	92	103	50	84	4130	85	3400	85	3170	86	2950	86	2740	90	101
54		87	4650	88	3810	89	3550	89	3310	89	3080	92	103	54	85	4330	86	3560	86	3320	87	3090	87	2870	90	101

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS																													
TEMP		TAILWIND		ZERO		H E A D W I N D S						VR V2		TEMP		TAILWIND		ZERO		H E A D W I N D S						VR V2													
DEG	C	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST		DEG	C	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST		DEG	C	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST								
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS							
-25		89	3380	89	2680	89	2470	89	2260	89	2060	90	103	-25	89	3400	89	2700	89	2490	89	2280	89	2080	90	104	-25	89	3400	89	2700	89	2490	89	2280	89	2080	90	104
-20		89	3430	89	2730	89	2510	89	2300	89	2100	90	103	-20	89	3450	89	2750	89	2530	89	2320	89	2120	90	104	-20	89	3450	89	2750	89	2530	89	2320	89	2120	90	104
-15		89	3480	89	2770	89	2550	89	2340	89	2140	90	103	-15	89	3500	89	2790	89	2580	89	2360	89	2160	90	104	-15	89	3500	89	2790	89	2580	89	2360	89	2160	90	104
-10		89	3530	89	2820	89	2600	89	2390	89	2180	90	103	-10	89	3550	89	2840	89	2620	89	2410	89	2200	90	104	-10	89	3550	89	2840	89	2620	89	2410	89	2200	90	104
-5		89	3580	89	2860	89	2640	89	2430	89	2220	90	103	-5	89	3600	89	2880	89	2660	89	2450	89	2240	90	104	-5	89	3600	89	2880	89	2660	89	2450	89	2240	90	104
0		88	3630	88	2910	88	2680	88	2460	88	2260	90	103	0	89	3650	89	2930	89	2700	89	2490	89	2280	90	104	0	89	3650	89	2930	89	2700	89	2490	89	2280	90	104
5		88	3680	88	2950	88	2720	88	2500	88	2290	90	103	5	89	3700	89	2970	89	2740	89	2520	89	2320	90	104	5	89	3700	89	2970	89	2740	89	2520	89	2320	90	104
10		88	3730	88	2990	88	2760	88	2540	88	2330	90	103	10	89	3740	89	3010	89	2780	89	2560	89	2350	90	104	10	89	3740	89	3010	89	2780	89	2560	89	2350	90	104
15		88	3780	88	3040	88	2810	88	2580	88	2370	90	103	15	88	3790	88	3050	88	2830	88	2600	88	2390	90	104	15	88	3790	88	3050	88	2830	88	2600	88	2390	90	104
20		88	3800	88	3050	88	2820	88	2600	88	2390	89	102	20	88	3810	88	3070	88	2840	88	2620	88	2400	90	103	20	88	3810	88	3070	88	2840	88	2620	88	2400	90	103
25		87	3810	87	3070	87	2840	87	2610	87	2400	89	102	25	87	3830	87	3080	87	2850	87	2630	87	2420	89	102	25	87	3830	87	3080	87	2850	87	2630	87	2420	89	102
30		85	3760	85	3010	85	2780	85	2560	85	2350	89	101	30	85	3760	85	3020	85	2790	85	2570	85	2360	87	100	30	85	3760	85	3020	85	2790	85	2570	85	2360	87	100
35		83	3680	83	2940	83	2710	83	2490	83	2280	89	101	35	83	3680	83	2940	83	2710	83	2490	83	2280	87	99	35	83	3680	83	2940	83	2710	83	2490	83	2280	87	99
40		80	3600	80	2870	81	2670	81	2480	82	2300	88	100	40	81	3590	81	2860	81	2630	81	2420	81	2210	87	99	40	81	3590	81	2860	81	2630	81	2420	81	2210	87	99
45		80	3670	81	3010	82	2800	82	2600	83	2410	88	99	45	78	3510	79	2820	79	2630	80	2440	80	2250	86	98	45	78	3510	79	2820	79	2630	80	2440	80	2250	86	98
50		81	3870	82	3180	83	2960	83	2750	84	2550	88	99	50	78	3620	80	2970	80	2760	81	2560	81	2370	86	98	50	78	3620	80	2970	80	2760	81	2560	81	2370	86	98
54		82	4050	83	3330	84	3100	84	2880	84	2670	88	99	54	79	3790	81	3100	81	2890	81	2680	82	2480	86	97	54	79	3790	81	3100	81	2890	81	2680	82	2480	86	97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT										10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT			
-25	90	3430	90	2730	90	2520	90	2310	90	2110	91	105	-25	90	3470	90	2770	90	2550	90	2350	90	2150	92	106		
-20	89	3480	89	2780	89	2560	89	2350	89	2150	91	105	-20	90	3520	90	2820	90	2600	90	2390	90	2190	92	106		
-15	89	3530	89	2820	89	2600	89	2390	89	2190	91	105	-15	90	3570	90	2860	90	2640	90	2430	90	2230	92	106		
-10	89	3580	89	2870	89	2650	89	2430	89	2230	91	105	-10	90	3620	90	2910	90	2680	90	2470	90	2270	92	106		
-5	89	3630	89	2910	89	2690	89	2470	89	2270	91	105	-5	90	3670	90	2950	90	2730	90	2510	90	2300	92	106		
0	89	3680	89	2950	89	2730	89	2510	89	2310	91	105	0	90	3720	90	2990	90	2770	90	2550	90	2340	92	106		
5	89	3720	89	3000	89	2770	89	2550	89	2340	91	105	5	89	3760	89	3030	89	2810	89	2590	89	2380	92	106		
10	89	3770	89	3040	89	2810	89	2590	89	2380	91	105	10	89	3810	89	3080	89	2850	89	2630	89	2420	92	106		
15	89	3820	89	3080	89	2850	89	2630	89	2420	91	105	15	89	3860	89	3120	89	2890	89	2670	89	2460	92	106		
20	88	3840	88	3100	88	2870	88	2640	88	2430	90	104	20	89	3870	89	3130	89	2900	89	2680	89	2470	91	105		
25	88	3850	88	3110	88	2880	88	2660	88	2440	90	103	25	88	3890	88	3140	88	2910	88	2690	88	2480	90	104		
30	86	3780	86	3040	86	2810	86	2590	86	2380	87	101	30	86	3810	86	3070	86	2840	86	2620	86	2410	88	102		
35	83	3690	83	2950	83	2730	83	2510	83	2300	85	98	35	84	3700	84	2970	84	2750	84	2530	84	2320	85	99		
40	81	3590	81	2870	81	2640	81	2420	81	2220	85	97	40	81	3600	81	2880	81	2650	81	2440	81	2230	83	96		
45	78	3500	78	2780	78	2550	78	2340	78	2130	85	97	45	79	3500	79	2780	79	2560	79	2350	79	2140	82	95		
50	76	3420	77	2770	78	2580	78	2390	79	2210	84	96	50	76	3410	76	2690	76	2470	76	2260	76	2060	82	95		
54	76	3530	78	2880	78	2690	79	2490	79	2300	84	96	54	74	3340	75	2690	76	2500	76	2310	77	2130	82	94		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO		HEADWINDS								TEMP DEG C	TAILWIND		ZERO		HEADWINDS													
	10 KTS		WIND		10 KTS		20 KTS		30 KTS		10 KTS			WIND		10 KTS		20 KTS		30 KTS											
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2								
-25	93	4080	95	3290	96	3070	96	2850	97	2640	102	112	-25	92	3930	94	3190	95	2970	95	2760	96	2560	101	111						
-20	93	4160	95	3350	96	3130	96	2910	97	2700	102	112	-20	92	4010	94	3250	95	3030	95	2810	95	2610	101	111						
-15	93	4240	95	3410	96	3180	96	2970	97	2760	102	112	-15	92	4090	94	3310	94	3080	95	2870	95	2660	101	111						
-10	93	4320	95	3470	96	3240	96	3020	97	2810	102	112	-10	91	4160	94	3360	94	3140	95	2930	95	2720	101	111						
-5	92	4400	95	3530	96	3300	96	3080	97	2860	102	112	-5	91	4240	94	3420	94	3200	95	2980	95	2770	101	111						
0	92	4480	95	3600	96	3360	96	3130	97	2920	102	112	0	91	4320	94	3480	94	3250	95	3030	95	2820	101	111						
5	92	4570	95	3680	96	3420	96	3190	97	2970	102	112	5	91	4400	94	3540	94	3310	95	3090	95	2880	101	111						
10	92	4650	95	3750	96	3480	96	3250	97	3030	102	112	10	91	4480	94	3610	94	3370	95	3140	95	2930	101	111						
15	92	4770	95	3850	96	3570	96	3330	97	3110	102	112	15	91	4590	94	3710	95	3450	95	3220	95	3000	101	111						
20	93	4950	95	3990	96	3710	97	3450	97	3220	102	112	20	91	4760	94	3850	95	3570	95	3340	96	3110	101	111						
25	93	5160	96	4160	97	3860	97	3580	98	3350	102	112	25	92	4960	95	4000	95	3720	96	3460	96	3230	101	111						
30	94	5480	97	4410	97	4090	98	3790	99	3530	102	112	30	93	5260	95	4240	96	3940	97	3650	97	3410	101	111						
35	95	5830	97	4680	98	4340	99	4020	99	3730	102	112	35	94	5590	96	4500	97	4170	98	3870	98	3600	101	111						
40	96	6220	98	4990	99	4630	99	4290	100	3970	102	112	40	95	5960	97	4790	98	4440	98	4120	99	3820	101	111						
45	97	6660	99	5340	100	4950	100	4580	101	4240	102	112	45	96	6380	98	5120	98	4750	99	4400	100	4070	101	111						
48	97	6950	99	5560	100	5160	101	4780	101	4420	102	112	50	97	6850	99	5480	99	5080	100	4710	100	4350	101	111						
50	98	7160	100	5720	100	5300	101	4910	101	4540	102	112	52	97	7050	99	5640	100	5230	100	4840	100	4470	101	111						

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				VR	V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS						20 KTS	30 KTS				
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT				
-25	90 3710	92 3020	92 2810	93 2610	93 2420	99 110		-25	88 3510	90 2870	90 2670	91 2480	91 2290	98 109			
-20	90 3780	92 3080	92 2870	93 2660	93 2470	99 110		-20	88 3570	90 2920	90 2720	91 2530	91 2340	98 109			
-15	90 3850	92 3130	92 2920	93 2720	93 2520	99 110		-15	88 3630	90 2980	90 2770	91 2580	91 2390	98 109			
-10	90 3920	92 3190	92 2980	93 2770	93 2570	99 110		-10	88 3690	89 3030	90 2820	91 2620	91 2430	98 109			
-5	89 3990	92 3250	92 3030	93 2820	93 2620	99 110		-5	88 3760	89 3080	90 2870	91 2670	91 2480	98 109			
0	89 4060	92 3300	92 3080	93 2870	93 2670	99 110		0	88 3820	89 3130	90 2920	91 2720	91 2530	98 109			
5	89 4130	92 3360	92 3140	93 2920	93 2720	99 110		5	87 3890	89 3190	90 2970	90 2770	91 2570	98 109			
10	89 4200	92 3410	92 3190	93 2980	93 2770	99 110		10	87 3960	89 3240	90 3030	90 2820	91 2620	98 109			
15	89 4310	92 3490	92 3270	93 3050	93 2840	99 110		15	87 4050	90 3310	90 3100	91 2890	91 2690	98 108			
20	90 4460	92 3610	93 3380	93 3150	94 2940	99 110		20	88 4190	90 3420	90 3190	91 2980	91 2770	98 108			
25	90 4650	93 3760	93 3500	94 3270	94 3050	99 110		25	88 4350	91 3540	91 3310	91 3090	92 2880	98 108			
30	91 4920	94 3970	94 3690	95 3450	95 3220	99 110		30	89 4600	92 3720	92 3490	92 3250	93 3030	98 108			
35	92 5220	94 4210	95 3900	95 3640	96 3400	99 110		35	90 4870	92 3930	93 3680	93 3430	94 3200	98 108			
40	93 5560	95 4470	96 4150	96 3860	97 3600	99 110		40	91 5180	93 4180	94 3890	94 3630	94 3390	97 108			
45	94 5940	96 4780	97 4430	97 4110	98 3830	99 110		45	92 5530	94 4450	95 4130	95 3860	95 3600	97 108			
50	95 6360	97 5110	97 4740	98 4390	98 4080	99 109		50	93 5910	95 4750	95 4410	96 4100	96 3830	97 108			
52	95 6540	97 5250	98 4870	98 4510	99 4180	99 109		52	93 6070	95 4880	96 4530	96 4210	96 3930	97 108			

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS																	
TEMP		TAILWIND		ZERO		HEADWINDS				TEMP		TAILWIND		ZERO		HEADWINDS									
DEG	10 KTS	20 KTS	30 KTS	VR	V2	DEG	10 KTS	20 KTS	30 KTS	VR	V2	DEG	10 KTS	20 KTS	30 KTS	VR	V2								
C	V1	DIST	V1	DIST	KIAS	FT	C	V1	DIST	V1	DIST	KIAS	FT	C	V1	DIST	V1	DIST	KIAS	FT					
-25	88	3480	88	2760	88	2530	88	2350	89	2170	96	107	-25	88	3480	88	2760	88	2540	88	2320	88	2120	94	106
-20	88	3540	88	2810	88	2580	88	2390	89	2210	96	107	-20	88	3530	88	2810	88	2580	88	2370	88	2160	94	106
-15	88	3590	88	2850	88	2630	88	2440	89	2260	96	107	-15	88	3590	88	2850	88	2630	88	2410	88	2200	94	106
-10	88	3640	88	2900	88	2680	88	2490	89	2300	96	107	-10	88	3640	88	2900	88	2670	88	2450	88	2240	94	106
-5	88	3700	88	2950	88	2720	88	2530	89	2350	96	107	-5	88	3690	88	2950	88	2720	88	2500	88	2280	94	106
0	88	3760	88	3000	88	2770	88	2580	89	2390	96	107	0	88	3740	88	2990	88	2760	88	2540	88	2330	94	106
5	88	3830	88	3040	88	2820	88	2620	89	2430	96	107	5	88	3790	88	3040	88	2810	88	2580	88	2370	94	106
10	87	3900	87	3090	88	2870	88	2670	89	2480	96	107	10	88	3860	88	3090	88	2850	88	2620	88	2410	94	106
15	87	3930	87	3140	88	2930	88	2730	89	2540	96	107	15	87	3890	87	3110	87	2870	87	2650	87	2430	94	106
20	86	3940	88	3240	88	3020	89	2820	89	2620	96	107	20	86	3880	86	3100	86	2860	86	2660	87	2470	94	106
25	86	4080	88	3350	89	3130	89	2920	90	2710	96	107	25	85	3850	86	3160	86	2960	87	2750	87	2560	94	105
30	87	4290	89	3510	89	3290	90	3060	90	2850	96	106	30	85	4020	87	3310	87	3090	88	2880	88	2680	94	105
35	88	4540	90	3700	90	3460	91	3230	91	3010	96	106	35	86	4240	88	3480	88	3250	88	3030	89	2820	94	105
40	89	4830	91	3910	91	3660	92	3420	92	3180	96	106	40	87	4500	89	3680	89	3440	89	3210	90	2980	94	105
45	90	5150	92	4150	92	3880	93	3630	93	3380	96	106	45	88	4790	90	3900	90	3650	90	3400	91	3160	94	105
50	91	5490	93	4420	93	4120	94	3850	94	3590	96	106	50	89	5100	91	4130	91	3870	91	3610	92	3360	94	104
52	91	5640	93	4540	94	4230	94	3950	94	3680	96	106	52	89	5240	91	4240	91	3960	92	3700	92	3480	94	104

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS		20 KTS		10 KTS		20 KTS		30 KTS				10 KTS		20 KTS		10 KTS		20 KTS		30 KTS																		
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT			V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT																	
-25	88	3480	88	2760	88	2540	88	2330	88	2120	92 105	-25	89	3480	89	2770	89	2550	89	2340	89	2140	91 103																
-20	88	3530	88	2810	88	2590	88	2370	88	2170	92 105	-20	89	3540	89	2820	89	2600	89	2380	89	2180	91 103																
-15	88	3580	88	2860	88	2630	88	2410	88	2210	92 105	-15	89	3590	89	2860	89	2640	89	2430	89	2220	91 103																
-10	88	3640	88	2900	88	2680	88	2460	88	2250	92 105	-10	89	3640	89	2910	89	2690	89	2470	89	2260	91 103																
-5	88	3690	88	2950	88	2720	88	2500	88	2290	92 105	-5	88	3690	88	2960	88	2730	88	2510	88	2300	91 103																
0	88	3740	88	3000	88	2770	88	2540	88	2330	92 105	0	88	3750	88	3010	88	2780	88	2550	88	2340	91 103																
5	88	3790	88	3040	88	2810	88	2590	88	2370	92 105	5	88	3800	88	3050	88	2820	88	2600	88	2380	91 103																
10	88	3840	88	3090	88	2850	88	2630	88	2410	92 105	10	88	3850	88	3100	88	2860	88	2640	88	2420	91 103																
15	87	3870	87	3110	87	2880	87	2650	87	2430	92 105	15	88	3870	88	3120	88	2880	88	2660	88	2440	91 103																
20	86	3860	86	3100	86	2860	86	2640	86	2420	92 104	20	87	3860	87	3100	87	2870	87	2640	87	2420	91 103																
25	85	3840	85	3080	85	2840	85	2610	85	2410	92 104	25	85	3830	85	3080	85	2840	85	2620	85	2400	90 103																
30	83	3790	84	3120	85	2920	85	2720	86	2520	92 103	30	83	3760	83	3010	83	2780	83	2560	83	2370	90 102																
35	84	3970	85	3270	86	3060	86	2850	86	2640	92 103	35	81	3750	83	3080	83	2880	84	2670	84	2480	90 102																
40	85	4190	86	3450	87	3230	87	3000	87	2790	92 103	40	82	3930	84	3240	84	3020	84	2810	85	2610	90 101																
45	86	4450	87	3660	88	3420	88	3180	88	2960	92 103	45	83	4150	85	3420	85	3200	85	2970	86	2760	90 101																
50	87	4740	88	3880	89	3620	89	3380	89	3140	92 103	50	85	4390	86	3630	86	3390	86	3150	87	2930	90 101																
52	87	4860	89	3970	89	3710	89	3460	90	3220	92 103	52	85	4500	86	3710	86	3470	87	3230	87	3000	90 101																

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-25	89	3500	89	2790	89	2570	89	2350	89	2150	90	104	-25	89	3520	89	2810	89	2590	89	2380	89	2170	91	104														
-20	89	3550	89	2830	89	2610	89	2400	89	2190	90	104	-20	89	3570	89	2850	89	2630	89	2420	89	2210	91	104														
-15	89	3600	89	2880	89	2660	89	2440	89	2230	90	104	-15	89	3620	89	2900	89	2680	89	2460	89	2260	91	104														
-10	89	3650	89	2930	89	2700	89	2480	89	2280	90	104	-10	89	3670	89	2950	89	2720	89	2510	89	2300	91	105														
-5	89	3710	89	2970	89	2750	89	2530	89	2320	90	104	-5	89	3720	89	2990	89	2770	89	2550	89	2340	91	104														
0	89	3760	89	3020	89	2790	89	2570	89	2360	90	104	0	89	3780	89	3040	89	2810	89	2590	89	2380	91	104														
5	89	3810	89	3060	89	2830	89	2610	89	2400	90	103	5	89	3830	89	3090	89	2850	89	2630	89	2420	91	104														
10	89	3860	89	3110	89	2880	89	2650	89	2440	90	103	10	89	3880	89	3130	89	2900	89	2670	89	2460	91	104														
15	88	3880	88	3130	88	2900	88	2670	88	2450	90	103	15	88	3900	88	3150	88	2920	88	2690	88	2470	90	104														
20	87	3860	87	3110	87	2880	87	2650	87	2440	89	102	20	87	3870	87	3130	87	2890	87	2670	87	2450	89	102														
25	85	3830	85	3080	85	2850	85	2620	85	2410	89	101	25	86	3840	86	3090	86	2860	86	2640	86	2420	87	101														
30	83	3760	83	3010	83	2780	83	2550	83	2340	89	101	30	83	3760	83	3020	83	2780	83	2560	83	2350	87	99														
35	81	3680	81	2940	81	2710	81	2510	82	2330	88	100	35	81	3680	81	2940	81	2710	81	2490	81	2280	87	99														
40	80	3700	81	3040	82	2830	82	2630	83	2440	88	100	40	79	3600	79	2860	79	2650	80	2460	80	2280	87	98														
45	81	3900	82	3200	82	2980	83	2770	83	2570	88	99	45	78	3650	79	2990	80	2790	80	2590	81	2400	86	98														
50	82	4120	83	3390	83	3160	84	2940	84	2720	88	99	50	79	3850	80	3160	81	2940	81	2730	82	2500	86	97														
52	82	4210	84	3470	84	3230	84	3010	85	2790	88	99	52	80	3930	81	3230	81	3010	82	2800	82	2590	86	97														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS												
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						
	10 KTS		10 KTS		20 KTS	30 KTS	10 KTS			10 KTS		20 KTS	30 KTS							
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	VR V2				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS				
-25	93	4200	95	3380	96	3150	96	2940	91	4050	94	3280	94	3050	95	2840	95	2640	101	111
-20	92	4280	95	3440	96	3220	96	3000	91	4130	94	3330	94	3110	95	2900	95	2690	101	111
-15	92	4370	95	3510	96	3280	96	3060	91	4210	94	3390	94	3170	95	2960	95	2750	101	111
-10	92	4450	95	3580	96	3340	96	3110	91	4280	94	3450	94	3230	95	3010	95	2800	101	111
-5	92	4530	95	3650	96	3390	96	3170	91	4360	94	3510	94	3290	95	3070	95	2850	101	111
0	92	4610	95	3720	96	3450	96	3230	91	4440	94	3580	94	3340	95	3120	95	2910	101	111
5	92	4700	95	3790	96	3520	96	3280	91	4520	94	3650	94	3400	95	3180	95	2960	101	111
10	92	4790	95	3870	96	3590	96	3340	91	4610	93	3720	94	3460	95	3240	95	3020	101	111
15	92	4990	95	4030	96	3750	97	3480	91	4810	94	3880	95	3600	95	3360	96	3140	101	111
20	93	5250	96	4240	96	3930	97	3650	92	5050	95	4070	95	3790	96	3520	96	3290	101	111
25	94	5550	96	4470	97	4150	98	3850	93	5330	95	4300	96	3990	97	3700	97	3460	101	111
30	94	5900	97	4750	98	4410	99	4080	93	5660	96	4560	97	4230	97	3930	98	3650	101	111
35	95	6280	98	5050	99	4690	99	4340	94	6030	97	4850	97	4500	98	4170	99	3860	101	111
40	96	6720	99	5390	99	5000	100	4630	95	6430	98	5170	98	4800	99	4450	99	4110	101	111
45	97	7210	99	5780	100	5350	101	4960	96	6900	98	5530	99	5130	99	4760	100	4400	101	111
47	98	7420	100	5940	100	5500	101	5100	97	7100	99	5690	99	5270	100	4890	100	4520	101	111
									50	7740	99	5930	100	5500	100	5090	101	4710	101	111

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2	KIAS										
	10 KTS		10 KTS		20 KTS	30 KTS	10 KTS					10 KTS		20 KTS	30 KTS																
	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST												
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-25	90	3810	92	3110	92	2900	93	2690	93	2500	99	110	-25	88	3610	89	2950	90	2750	90	2550	91	2370	98	109						
-20	89	3890	92	3170	92	2950	93	2750	93	2550	99	110	-20	88	3680	89	3010	90	2800	90	2610	91	2420	98	109						
-15	89	3960	92	3220	92	3010	93	2800	93	2600	99	110	-15	88	3750	89	3060	90	2860	90	2660	91	2460	98	109						
-10	89	4030	92	3280	92	3060	93	2850	93	2650	99	110	-10	88	3830	89	3120	90	2910	90	2710	91	2510	98	109						
-5	89	4100	91	3340	92	3120	92	2910	93	2700	99	110	-5	88	3910	89	3170	90	2960	90	2760	91	2560	98	109						
0	89	4170	91	3390	92	3170	92	2960	93	2750	99	110	0	88	3980	89	3220	90	3010	90	2800	91	2610	98	109						
5	89	4250	92	3450	92	3230	92	3010	93	2810	99	110	5	88	4060	89	3280	90	3060	90	2860	91	2660	98	109						
10	89	4330	92	3510	92	3290	92	3070	93	2860	99	110	10	88	4130	89	3330	90	3120	90	2910	91	2710	98	109						
15	89	4500	92	3640	92	3400	93	3180	93	2970	99	110	15	87	4230	90	3450	90	3230	91	3010	91	2800	98	108						
20	90	4730	93	3820	93	3560	94	3330	94	3100	99	110	20	88	4420	90	3590	91	3360	91	3140	92	2930	98	108						
25	91	4980	93	4020	94	3740	94	3500	95	3260	99	110	25	89	4660	91	3770	92	3530	92	3300	93	3070	98	108						
30	92	5280	94	4260	95	3960	95	3690	96	3440	99	110	30	90	4930	92	3980	93	3720	93	3480	93	3240	98	108						
35	92	5610	95	4530	96	4200	96	3900	96	3640	99	110	35	91	5230	93	4220	94	3930	94	3670	94	3430	97	108						
40	93	5990	96	4820	96	4470	97	4150	97	3860	99	110	40	92	5570	94	4490	94	4170	95	3890	95	3630	97	108						
45	94	6410	96	5150	97	4780	98	4430	98	4110	99	109	45	92	5950	94	4790	95	4450	96	4140	96	3860	97	108						
50	95	6870	97	5510	98	5120	98	4740	99	4390	99	109	50	93	6370	95	5130	96	4760	96	4410	97	4110	97	108						

WEIGHT = 14500 LBS									VENR = 160 KIAS									WEIGHT = 14000 LBS									VENR = 160 KIAS											
TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S						VR V2 KIAS											
	10 KTS		DIST	20 KTS		DIST	30 KTS		DIST	10 KTS		DIST			20 KTS		DIST	30 KTS		DIST	10 KTS		DIST	20 KTS		DIST		30 KTS		DIST								
	V1	DIST		V1	DIST		V1	DIST		V1	DIST				V1	DIST		V1	DIST		V1	DIST		V1	DIST			V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST
	KIAS	FT		KIAS	FT		KIAS	FT		KIAS	FT				KIAS	FT		KIAS	FT		KIAS	FT		KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-25	88	3600		88	2860		88	2640	88	2420	88	2240	96	107	-25	88	3600		88	2860		88	2640	88	2420	88	2210	94	106									
-20	88	3660		88	2910		88	2680	88	2470	89	2290	96	107	-20	88	3650		88	2910		88	2680	88	2460	88	2250	94	106									
-15	88	3710		88	2960		88	2730	88	2520	89	2330	96	107	-15	88	3710		88	2960		88	2730	88	2510	88	2300	94	106									
-10	88	3790		88	3010		88	2780	88	2560	89	2380	96	107	-10	88	3760		88	3010		88	2780	88	2560	88	2340	94	106									
-5	88	3860		88	3060		88	2830	88	2610	89	2420	96	107	-5	88	3820		88	3060		88	2830	88	2600	88	2390	94	106									
0	88	3940		88	3110		88	2880	88	2660	89	2470	96	107	0	88	3900		88	3110		88	2880	88	2650	88	2430	94	106									
5	88	4010		88	3160		88	2920	88	2700	89	2510	96	107	5	88	3960		88	3160		88	2920	88	2690	88	2470	94	106									
10	88	4080		88	3210		88	2970	88	2750	89	2560	96	107	10	88	4030		88	3210		88	2970	88	2740	88	2510	94	106									
15	86	4050		87	3270		88	3060	89	2850	89	2650	96	107	15	87	4000		87	3180		87	2940	87	2710	87	2500	94	106									
20	86	4150		88	3400		89	3180	89	2970	90	2760	96	107	20	85	3940		86	3220		86	3000	87	2800	87	2600	94	105									
25	87	4350		89	3560		89	3330	90	3110	90	2890	96	106	25	85	4070		87	3350		87	3140	87	2920	88	2720	94	105									
30	88	4600		90	3740		90	3500	91	3270	91	3050	96	106	30	86	4290		87	3520		88	3290	88	3070	89	2860	94	105									
35	89	4870		91	3950		91	3700	92	3450	92	3220	96	106	35	87	4540		88	3710		89	3470	89	3240	90	3020	94	105									
40	90	5190		92	4190		92	3910	92	3660	93	3410	96	106	40	88	4820		89	3930		90	3680	90	3430	90	3190	94	105									
45	91	5530		93	4460		93	4150	93	3880	94	3620	96	106	45	89	5140		90	4160		91	3900	91	3640	91	3390	94	104									
50	91	5910		93	4760		94	4420	94	4130	94	3850	96	106	50	89	5480		91	4420		92	4140	92	3870	92	3600	94	104									

Figure S24-4 (Sheet 5 of 12)

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT											
-25	89	3600	89	2870	89	2640	89	2430	89	2220	92 105	-25	89	3600	89	2880	89	2650	89	2440	89	2230	91 104																
-20	89	3650	89	2920	89	2690	89	2470	89	2260	92 105	-20	89	3660	89	2930	89	2700	89	2480	89	2270	91 104																
-15	89	3710	89	2970	89	2740	89	2520	89	2300	92 105	-15	89	3710	89	2970	89	2750	89	2530	89	2320	91 104																
-10	88	3760	88	3010	88	2780	88	2560	88	2350	92 105	-10	89	3770	89	3020	89	2790	89	2570	89	2360	91 104																
-5	88	3820	88	3070	88	2830	88	2610	88	2390	92 105	-5	89	3820	89	3070	89	2840	89	2620	89	2400	91 104																
0	88	3870	88	3120	88	2880	88	2650	88	2440	92 105	0	89	3880	89	3120	89	2890	89	2670	89	2450	91 104																
5	88	3930	88	3160	88	2930	88	2700	88	2480	92 105	5	89	3930	89	3170	89	2940	89	2710	89	2490	91 104																
10	88	3990	88	3210	88	2970	88	2740	88	2520	92 105	10	89	3980	89	3220	89	2980	89	2750	89	2530	91 104																
15	87	3960	87	3180	87	2940	87	2710	87	2490	92 105	15	87	3950	87	3190	87	2950	87	2720	87	2500	91 103																
20	85	3910	85	3140	85	2900	85	2670	85	2460	92 104	20	85	3900	85	3140	85	2900	85	2670	85	2450	90 103																
25	83	3850	84	3170	85	2960	85	2760	86	2560	92 104	25	83	3840	83	3080	83	2840	83	2620	83	2410	90 102																
30	84	4010	85	3310	85	3100	86	2880	86	2680	92 103	30	81	3780	83	3120	83	2910	84	2710	84	2520	90 102																
35	84	4230	86	3490	86	3260	87	3040	87	2820	92 103	35	82	3960	83	3270	84	3050	84	2840	85	2640	90 101																
40	85	4480	87	3680	87	3440	88	3210	88	2990	92 103	40	83	4180	84	3450	85	3220	85	3000	86	2790	90 101																
45	86	4770	88	3900	88	3650	89	3410	89	3170	92 103	45	84	4430	85	3650	86	3410	86	3180	86	2960	90 101																
50	87	5080	89	4140	89	3870	89	3610	90	3360	92 103	50	85	4710	86	3870	87	3620	87	3370	87	3140	90 101																

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-25	89 3620	89 2890	89 2670	89 2450	89 2250	91 104	-25	90 3640	90 2920	90 2690	90 2480	90 2270	91 105						
-20	89 3670	89 2940	89 2720	89 2500	89 2290	91 104	-20	90 3690	90 2960	90 2740	90 2520	90 2310	91 105						
-15	89 3720	89 2990	89 2760	89 2540	89 2330	91 104	-15	89 3740	89 3010	89 2780	89 2570	89 2350	91 105						
-10	89 3780	89 3040	89 2810	89 2590	89 2380	91 104	-10	89 3800	89 3060	89 2830	89 2610	89 2400	91 105						
-5	89 3830	89 3090	89 2860	89 2630	89 2420	91 104	-5	89 3850	89 3110	89 2880	89 2660	89 2440	91 105						
0	89 3890	89 3140	89 2910	89 2680	89 2470	91 104	0	89 3910	89 3160	89 2930	89 2700	89 2490	91 105						
5	89 3940	89 3190	89 2950	89 2720	89 2510	91 104	5	89 3960	89 3210	89 2970	89 2750	89 2530	91 105						
10	89 3990	89 3230	89 2990	89 2770	89 2550	91 104	10	89 4010	89 3250	89 3020	89 2790	89 2570	91 105						
15	87 3960	87 3200	87 2960	87 2730	87 2510	89 102	15	88 3970	88 3210	88 2980	88 2750	88 2530	90 103						
20	86 3910	86 3140	86 2910	86 2680	86 2460	89 101	20	86 3910	86 3160	86 2920	86 2690	86 2480	87 101						
25	83 3840	83 3080	83 2850	83 2620	83 2400	89 101	25	84 3840	84 3090	84 2850	84 2630	84 2410	87 100						
30	81 3770	81 3010	81 2780	81 2550	82 2360	88 100	30	82 3760	82 3010	82 2780	82 2560	82 2340	87 99						
35	79 3730	81 3070	81 2870	82 2670	82 2470	88 100	35	79 3680	79 2940	79 2710	79 2500	80 2310	87 98						
40	80 3920	82 3220	82 3010	83 2800	83 2600	88 99	40	78 3680	79 3020	80 2820	80 2620	81 2430	86 98						
45	82 4140	83 3410	83 3180	84 2960	84 2750	88 99	45	79 3870	80 3180	80 2960	81 2760	81 2550	86 97						
50	83 4380	84 3610	84 3370	85 3140	85 2920	88 99	50	80 4090	81 3370	82 3140	82 2920	82 2710	86 97						

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-25	90	3670	90	2950	90	2720	90	2510	90	2300	92 106	-25	90	3710	90	2990	90	2760	90	2550	90	2340	93 107																
-20	90	3720	90	2990	90	2770	90	2550	90	2340	92 106	-20	90	3760	90	3040	90	2810	90	2590	90	2380	93 107																
-15	90	3770	90	3040	90	2820	90	2600	90	2380	92 106	-15	90	3820	90	3080	90	2860	90	2640	90	2420	93 107																
-10	90	3830	90	3090	90	2860	90	2640	90	2430	92 106	-10	90	3870	90	3130	90	2900	90	2680	90	2470	93 107																
-5	90	3890	90	3140	90	2910	90	2690	90	2470	92 106	-5	90	3930	90	3180	90	2950	90	2730	90	2510	93 107																
0	90	3940	90	3190	90	2960	90	2740	90	2520	92 106	0	90	3980	90	3230	90	3000	90	2780	90	2560	93 107																
5	90	3990	90	3240	90	3000	90	2780	90	2560	92 106	5	90	4040	90	3280	90	3050	90	2820	90	2600	93 107																
10	90	4040	90	3280	90	3050	90	2820	90	2600	92 106	10	90	4090	90	3330	90	3090	90	2860	90	2640	93 107																
15	88	4000	88	3240	88	3010	88	2780	88	2560	90 104	15	88	4030	88	3280	88	3040	88	2810	88	2590	91 105																
20	86	3930	86	3170	86	2940	86	2720	86	2500	88 102	20	86	3950	86	3200	86	2970	86	2740	86	2530	89 103																
25	84	3850	84	3100	84	2870	84	2640	84	2430	86 99	25	84	3870	84	3120	84	2890	84	2670	84	2450	86 100																
30	82	3760	82	3020	82	2790	82	2570	82	2350	85 98	30	82	3770	82	3030	82	2800	82	2580	82	2370	84 97																
35	79	3680	79	2940	79	2710	79	2490	79	2280	85 97	35	80	3680	80	2950	80	2720	80	2500	80	2290	83 96																
40	77	3600	77	2860	77	2630	78	2440	78	2260	84 96	40	77	3590	77	2860	77	2630	77	2420	77	2210	82 95																
45	76	3620	77	2970	78	2760	78	2570	79	2380	84 96	45	75	3500	75	2780	75	2570	76	2380	76	2200	82 94																
50	77	3810	78	3130	79	2910	79	2710	80	2500	84 95	50	74	3550	76	2900	76	2700	77	2500	77	2320	82 94																

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-30	92 4240	95 3410	95 3190	96 2970	96 2760	102 112	-30	91 4080	94 3310	94 3080	95 2870	95 2670	101 111
-25	92 4330	95 3480	95 3250	96 3030	96 2820	102 112	-25	91 4170	94 3370	94 3150	95 2930	95 2720	101 111
-20	92 4410	95 3550	95 3310	96 3090	96 2880	102 112	-20	91 4250	94 3430	94 3210	95 2990	95 2780	101 111
-15	92 4500	95 3620	95 3370	96 3150	96 2940	102 112	-15	91 4330	94 3490	94 3270	95 3050	95 2840	101 111
-10	92 4590	95 3700	95 3440	96 3210	96 2990	102 112	-10	91 4420	94 3560	94 3330	95 3110	95 2890	101 111
-5	92 4670	94 3770	95 3500	96 3270	96 3050	102 112	-5	90 4500	93 3630	94 3390	94 3160	95 2950	101 111
0	91 4780	94 3860	95 3580	96 3340	96 3120	102 112	0	90 4600	93 3720	94 3460	95 3230	95 3020	101 111
5	92 4910	95 3970	95 3690	96 3430	97 3200	102 112	5	91 4720	93 3820	94 3550	95 3310	95 3090	101 111
10	92 5070	95 4100	96 3810	96 3530	97 3300	102 112	10	91 4880	94 3940	95 3660	95 3410	95 3190	101 111
15	93 5340	95 4320	96 4010	97 3720	98 3460	102 112	15	91 5130	94 4150	95 3860	96 3580	96 3350	101 111
20	93 5640	96 4550	97 4230	98 3920	98 3630	102 112	20	92 5410	95 4370	96 4060	96 3770	97 3520	101 111
25	94 5980	97 4820	98 4480	98 4150	99 3850	102 112	25	93 5740	96 4630	96 4300	97 3990	98 3710	101 111
30	95 6370	98 5130	98 4760	99 4410	100 4080	102 112	30	94 6110	96 4920	97 4570	98 4240	98 3920	101 111
35	96 6800	98 5460	99 5070	100 4700	100 4350	102 112	35	95 6510	97 5240	98 4860	98 4510	99 4170	101 111
40	97 7280	99 5840	100 5410	100 5020	101 4640	102 112	40	96 6960	98 5590	99 5190	99 4810	100 4450	101 111
41	97 7380	99 5920	100 5490	100 5090	101 4710	102 112	43	96 7260	98 5820	99 5400	100 5010	100 4640	101 111
43	97 7600	100 6090	100 5640	101 5230	101 4840	102 112	45	97 7470	99 5990	99 5550	100 5150	100 4760	101 111
							46	97 7580	99 6070	99 5630	100 5220	100 4830	101 111

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-30	89 3860	91 3140	92 2930	92 2720	93 2530	99 110	-30	88 3690	89 2980	90 2780	90 2580	91 2400	98 109
-25	89 3930	91 3210	92 2990	92 2780	93 2580	99 110	-25	88 3770	89 3040	90 2840	90 2640	91 2450	98 109
-20	89 4010	91 3260	92 3050	92 2840	93 2640	99 110	-20	88 3840	89 3100	90 2890	90 2690	91 2500	98 109
-15	89 4080	91 3320	92 3100	92 2890	93 2690	99 110	-15	88 3920	89 3150	90 2940	90 2740	91 2550	98 109
-10	89 4160	91 3380	92 3160	92 2950	93 2740	99 110	-10	88 4000	89 3210	90 3000	90 2790	91 2600	98 109
-5	89 4230	91 3440	92 3220	92 3000	93 2790	99 110	-5	88 4080	89 3270	90 3050	90 2850	91 2650	98 109
0	89 4320	91 3500	92 3280	92 3070	93 2860	99 110	0	88 4140	89 3330	90 3110	90 2910	91 2700	98 109
5	89 4430	92 3590	92 3360	93 3140	93 2930	99 110	5	87 4180	89 3410	90 3190	90 2980	91 2770	98 109
10	89 4560	92 3690	92 3450	93 3230	93 3010	99 110	10	87 4290	90 3500	90 3280	91 3060	91 2850	98 108
15	90 4810	92 3890	93 3620	94 3390	94 3160	99 110	15	88 4490	90 3650	91 3420	91 3190	92 2980	98 108
20	90 5060	93 4090	94 3800	94 3550	95 3320	99 110	20	89 4730	91 3830	92 3580	92 3350	92 3120	98 108
25	91 5360	94 4330	95 4020	95 3750	96 3500	99 110	25	89 5000	92 4040	93 3770	93 3530	93 3290	98 108
30	92 5690	95 4590	95 4260	96 3960	96 3690	99 110	30	90 5300	93 4280	93 3980	94 3720	94 3470	97 108
35	93 6050	95 4880	96 4530	97 4200	97 3910	99 110	35	91 5630	93 4550	94 4230	95 3930	95 3670	97 108
40	94 6460	96 5200	97 4830	97 4480	98 4150	99 110	40	92 6000	94 4840	95 4500	95 4170	96 3900	97 108
45	95 6920	97 5560	97 5170	98 4790	98 4430	99 109	45	93 6420	95 5170	95 4800	96 4450	96 4150	97 108
46	95 7020	97 5640	98 5240	98 4850	98 4490	99 109	48	94 6690	95 5390	96 5000	96 4640	97 4300	97 108
48	95 7230	97 5800	98 5380	98 4990	99 4620	99 109							

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-30	88 3670	88 2920	88 2690	88 2470	89 2270	96 108	-30	89 3660	89 2920	89 2690	89 2470	89 2260	94 106
-25	88 3720	88 2970	88 2740	88 2520	89 2310	96 108	-25	89 3720	89 2970	89 2740	89 2520	89 2310	94 106
-20	88 3800	88 3020	88 2790	88 2560	89 2360	96 108	-20	89 3770	89 3020	89 2790	89 2570	89 2350	94 106
-15	88 3880	88 3070	88 2840	88 2610	89 2410	96 108	-15	88 3840	88 3070	88 2840	88 2610	88 2400	94 106
-10	88 3950	88 3130	88 2890	88 2660	89 2460	96 108	-10	88 3910	88 3120	88 2890	88 2660	88 2440	94 106
-5	88 4030	88 3180	88 2940	88 2710	88 2500	96 108	-5	88 3990	88 3170	88 2940	88 2710	88 2490	94 106
0	88 4090	88 3220	88 2980	88 2750	89 2560	96 107	0	88 4050	88 3210	88 2970	88 2740	88 2520	94 106
5	87 4130	87 3240	88 3020	88 2820	89 2620	96 107	5	88 4080	88 3240	88 3000	88 2770	88 2540	94 106
10	87 4150	87 3320	88 3100	88 2890	89 2700	96 107	10	87 4100	87 3250	87 3010	87 2780	87 2550	94 106
15	86 4210	88 3450	89 3230	89 3020	89 2810	96 107	15	85 4030	86 3270	86 3050	87 2850	87 2650	94 105
20	87 4410	89 3610	89 3380	90 3150	90 2940	96 106	20	85 4130	86 3400	87 3180	87 2970	88 2770	94 105
25	87 4660	90 3790	90 3550	91 3320	91 3090	96 106	25	85 4350	87 3570	88 3340	88 3120	88 2900	94 105
30	88 4940	91 3990	91 3740	91 3500	92 3260	96 106	30	86 4600	88 3760	89 3520	89 3280	89 3060	94 105
35	89 5240	91 4240	92 3960	92 3700	93 3450	96 106	35	87 4870	89 3970	89 3710	90 3470	90 3230	94 105
40	90 5580	92 4500	93 4190	93 3920	93 3650	96 106	40	88 5180	90 4190	90 3930	91 3670	91 3420	94 105
45	91 5950	93 4800	93 4460	94 4160	94 3880	96 106	45	89 5520	91 4460	91 4170	92 3900	92 3630	94 104
48	92 6200	93 5000	94 4640	94 4320	95 4030	96 106	48	90 5740	91 4640	92 4330	92 4050	92 3770	94 104

Figure S24-4 (Sheet 7 of 12)

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS									VENR = 160 KIAS									WEIGHT = 13000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2												
	10 KTS								10 KTS										10 KTS																
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT								
-30	89	3660	89	2930	89	2700	89	2480	89	2270	92 105	-30	89	3670	89	2940	89	2710	89	2490	89	2280	91 104												
-25	89	3720	89	2980	89	2750	89	2520	89	2310	92 105	-25	89	3720	89	2980	89	2760	89	2540	89	2320	91 104												
-20	89	3770	89	3030	89	2790	89	2570	89	2360	92 105	-20	89	3780	89	3040	89	2810	89	2580	89	2370	91 104												
-15	89	3830	89	3080	89	2840	89	2620	89	2400	92 105	-15	89	3840	89	3090	89	2850	89	2630	89	2420	91 104												
-10	89	3890	89	3130	89	2890	89	2670	89	2450	92 105	-10	89	3890	89	3140	89	2900	89	2680	89	2460	91 104												
-5	89	3950	89	3180	89	2940	89	2710	89	2490	92 105	-5	89	3950	89	3190	89	2950	89	2720	89	2500	91 104												
0	88	4010	88	3220	88	2980	88	2750	88	2530	92 105	0	89	3990	89	3230	89	2990	89	2760	89	2540	91 104												
5	88	4040	88	3240	88	3000	88	2770	88	2550	92 105	5	88	4020	88	3250	88	3010	88	2780	88	2560	91 103												
10	87	4060	87	3250	87	3010	87	2780	87	2550	92 105	10	87	4030	87	3250	87	3020	87	2780	87	2560	91 103												
15	85	3980	85	3200	85	2960	85	2730	85	2510	92 104	15	85	3970	85	3200	85	2960	85	2730	85	2510	91 103												
20	83	3920	84	3210	85	3000	85	2800	86	2600	92 104	20	83	3910	83	3150	83	2910	83	2680	83	2460	90 102												
25	83	4060	85	3360	85	3140	86	2930	86	2720	92 103	25	81	3850	82	3160	83	2960	83	2750	84	2560	90 102												
30	84	4280	86	3530	86	3300	87	3080	87	2860	92 103	30	82	4010	83	3310	84	3090	84	2880	85	2680	90 101												
35	85	4530	87	3720	87	3480	87	3250	88	3020	92 103	35	83	4210	84	3480	85	3260	85	3040	85	2820	90 101												
40	86	4810	88	3930	88	3680	88	3440	89	3200	92 103	40	84	4460	85	3680	85	3440	86	3210	86	2990	90 101												
45	87	5120	89	4170	89	3900	89	3650	89	3400	92 103	45	85	4740	86	3900	86	3650	87	3400	87	3170	90 101												
48	88	5320	89	4320	89	4050	90	3780	90	3520	92 103	48	85	4920	87	4040	87	3780	87	3530	88	3280	90 101												

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-30	90	3680	90	2950	90	2730	90	2510	90	2300	91	105	-30	90	3700	90	2980	90	2750	90	2530	90	2320	92	106
-25	90	3740	90	3000	90	2770	90	2550	90	2340	91	105	-25	90	3760	90	3020	90	2800	90	2580	90	2370	92	106
-20	89	3790	89	3050	89	2820	89	2600	89	2390	91	105	-20	90	3810	90	3070	90	2840	90	2620	90	2410	92	106
-15	89	3850	89	3100	89	2870	89	2650	89	2430	91	105	-15	90	3870	90	3130	90	2890	90	2670	90	2460	92	106
-10	89	3900	89	3150	89	2920	89	2690	89	2480	91	105	-10	90	3930	90	3180	90	2940	90	2720	90	2500	92	106
-5	89	3960	89	3200	89	2970	89	2740	89	2520	91	105	-5	90	3980	90	3230	90	2990	90	2760	90	2540	92	105
0	89	4000	89	3240	89	3000	89	2770	89	2550	91	104	0	89	4020	89	3260	89	3030	89	2800	89	2580	92	105
5	88	4030	88	3260	88	3020	88	2790	88	2570	90	104	5	89	4040	89	3280	89	3040	89	2810	89	2590	91	105
10	88	4030	88	3270	88	3030	88	2800	88	2580	89	103	10	88	4050	88	3280	88	3050	88	2820	88	2590	90	103
15	86	3970	86	3210	86	2970	86	2740	86	2520	89	101	15	86	3980	86	3220	86	2980	86	2750	86	2530	88	101
20	84	3910	84	3150	84	2910	84	2680	84	2460	89	101	20	84	3910	84	3150	84	2920	84	2690	84	2470	87	100
25	81	3840	81	3080	81	2840	81	2620	81	2400	89	100	25	82	3840	82	3080	82	2850	82	2620	82	2400	87	99
30	79	3770	81	3110	81	2900	82	2700	82	2510	88	100	30	80	3760	80	3010	80	2780	80	2550	80	2350	87	99
35	80	3950	81	3260	82	3040	82	2840	83	2630	88	99	35	78	3710	79	3060	79	2850	80	2650	80	2460	86	98
40	81	4160	82	3440	83	3210	83	2990	84	2780	88	99	40	78	3890	80	3210	80	2990	81	2780	81	2580	86	97
45	82	4400	83	3640	84	3400	84	3170	85	2940	88	99	45	80	4110	81	3390	81	3160	82	2940	82	2730	86	97
48	83	4560	84	3770	84	3520	85	3280	85	3050	88	99	48	80	4260	81	3510	82	3280	82	3050	83	2830	86	97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST									
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT		
-30	90	3740	90	3010	90	2780	90	2560	90	2350	93	107	-30	91	3780	91	3050	91	2820	91	2610	91	2400	93	108
-25	90	3790	90	3060	90	2830	90	2610	90	2400	93	107	-25	91	3830	91	3100	91	2870	91	2650	91	2440	93	108
-20	90	3850	90	3110	90	2880	90	2660	90	2440	93	107	-20	91	3890	91	3150	91	2920	91	2700	91	2480	93	108
-15	90	3900	90	3160	90	2930	90	2700	90	2490	93	107	-15	90	3950	90	3200	90	2970	90	2740	90	2530	93	108
-10	90	3960	90	3210	90	2970	90	2750	90	2530	93	107	-10	90	4000	90	3250	90	3020	90	2790	90	2570	93	108
-5	90	4010	90	3260	90	3020	90	2790	90	2580	93	107	-5	90	4060	90	3300	90	3060	90	2840	90	2620	93	108
0	90	4050	90	3290	90	3060	90	2830	90	2610	92	106	0	90	4100	90	3340	90	3100	90	2870	90	2650	93	107
5	89	4070	89	3310	89	3070	89	2840	89	2620	92	106	5	89	4110	89	3350	89	3110	89	2880	89	2660	92	107
10	88	4070	88	3310	88	3070	88	2840	88	2620	91	104	10	89	4110	89	3350	89	3110	89	2880	89	2660	91	105
15	86	4000	86	3240	86	3000	86	2770	86	2550	88	102	15	87	4020	87	3270	87	3030	87	2800	87	2580	89	103
20	84	3920	84	3170	84	2930	84	2710	84	2490	86	99	20	85	3940	85	3190	85	2950	85	2730	85	2510	87	100
25	82	3840	82	3090	82	2850	82	2630	82	2410	85	98	25	82	3850	82	3100	82	2870	82	2650	82	2430	84	97
30	80	3760	80	3010	80	2780	80	2560	80	2340	85	97	30	80	3760	80	3020	80	2790	80	2570	80	2350	83	96
35	78	3680	78	2940	78	2710	78	2480	78	2290	85	97	35	78	3680	78	2940	78	2710	78	2490	78	2280	82	95
40	76	3650	77	3000	78	2790	78	2600	79	2410	84	96	40	76	3590	76	2860	76	2630	76	2410	76	2230	82	95
45	77	3830	78	3150	78	2940	79	2730	79	2530	84	95	45	74	3580	75	2930	76	2730	76	2530	77	2340	82	94
48	77	3960	79	3260	79	3040	79	2830	80	2620	84	95	48	75	3680	76	3020	76	2810	77	2610	77	2420	82	94

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2		TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2								
	10 KTS		WIND		10 KTS		20 KTS		30 KTS					10 KTS		WIND		10 KTS		20 KTS		30 KTS										
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	
-30	92	4370	95	3510	95	3280	96	3060	96	2850	102	112	-30	91	4210	93	3400	94	3180	94	2960	95	2760	101	111							
-25	92	4460	95	3590	95	3350	96	3130	96	2910	102	112	-25	91	4300	93	3470	94	3250	94	3030	95	2820	101	111							
-20	92	4550	94	3670	95	3410	96	3190	96	2970	102	112	-20	90	4380	93	3530	94	3300	94	3090	95	2870	101	111							
-15	91	4640	94	3750	95	3480	96	3250	96	3030	102	112	-15	90	4470	93	3610	94	3370	94	3150	95	2930	101	111							
-10	91	4730	94	3820	95	3550	96	3310	96	3090	102	112	-10	90	4560	93	3690	94	3430	94	3210	95	2990	101	111							
-5	91	4830	94	3900	95	3620	96	3370	96	3150	102	112	-5	90	4640	93	3760	94	3490	94	3270	95	3050	101	111							
0	91	4980	94	4030	95	3750	96	3480	96	3250	102	112	0	90	4800	93	3880	94	3600	95	3370	95	3140	101	111							
5	92	5170	95	4180	95	3890	96	3600	97	3360	102	112	5	91	4970	93	4020	94	3740	95	3480	95	3250	101	111							
10	92	5420	95	4380	96	4070	97	3780	97	3510	102	112	10	91	5200	94	4210	95	3920	96	3630	96	3400	101	111							
15	93	5730	96	4630	97	4300	97	4000	98	3700	102	112	15	92	5500	95	4450	96	4140	96	3840	97	3570	101	111							
20	94	6080	97	4910	97	4560	98	4230	99	3920	102	112	20	93	5830	95	4710	96	4380	97	4060	98	3770	101	111							
25	95	6470	97	5210	98	4840	99	4490	99	4160	102	112	25	94	6200	96	5000	97	4640	98	4310	98	3990	101	111							
30	96	6890	98	5550	99	5150	99	4780	100	4420	102	112	30	95	6600	97	5320	98	4940	98	4580	99	4240	101	111							
35	96	7370	99	5920	99	5490	100	5090	101	4710	102	112	35	95	7040	98	5670	98	5260	99	4880	99	4520	101	111							
37	97	7570	99	6080	100	5640	100	5220	101	4840	102	112	37	96	7440	98	5970	99	5540	99	5140	100	4760	101	111							
39	97	7790	99	6240	100	5790	100	5370	101	4970	102	112	39	96	7550	98	6060	99	5620	99	5210	100	4820	101	111							
													42	97	7770	99	6230	99	5770	100	5350	100	4960	101	111							

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT																				
-30	89 3970	91 3240	92 3020	92 2810	93 2610	99 110			-30	88 3860	89 3070	90 2870	90 2670	91 2480	98 109			-25	88 4060	91 3300	92 3080	92 2870	93 2670	99 110			-25	88 3930	89 3130	90 2920	90 2720	91 2530	98 109		
-20	89 4130	91 3360	92 3140	92 2930	93 2730	99 110			-20	88 4020	89 3190	90 2980	90 2780	91 2580	98 109			-15	89 4210	91 3420	92 3200	92 2990	93 2780	99 110			-15	88 4100	89 3250	90 3040	90 2830	91 2630	98 109		
-10	88 4290	91 3480	92 3260	92 3040	93 2840	99 110			-10	88 4180	89 3310	90 3090	90 2890	91 2690	98 109			-5	88 4370	91 3540	92 3320	92 3100	93 2890	99 110			-5	88 4260	89 3370	90 3150	90 2940	91 2740	98 109		
0	88 4500	91 3650	92 3410	92 3190	93 2980	99 110			0	87 4280	89 3460	90 3240	90 3020	91 2820	98 109			5	89 4650	92 3770	92 3520	93 3290	93 3070	99 110			5	87 4380	90 3560	90 3340	91 3120	91 2910	98 108		
10	89 4870	92 3950	93 3670	93 3430	94 3200	99 110			10	87 4550	90 3690	91 3470	91 3240	91 3020	98 108			15	90 5140	93 4160	94 3870	94 3610	95 3370	99 110			15	88 4810	91 3900	92 3640	92 3400	92 3180	98 108		
20	91 5440	94 4400	94 4090	95 3800	95 3550	99 110			20	89 5080	92 4110	92 3830	93 3580	93 3340	98 108			25	92 5770	94 4670	95 4340	96 4020	96 3750	99 110			25	90 5380	92 4350	93 4050	94 3780	94 3530	98 108		
30	93 6140	95 4950	96 4600	96 4270	97 3960	99 110			30	91 5710	93 4620	94 4290	94 3990	95 3730	97 108			35	94 6540	96 5270	96 4900	97 4540	98 4210	99 110			35	92 6070	94 4900	94 4560	95 4230	95 3940	97 108		
40	94 6990	96 5630	97 5220	98 4850	98 4490	99 109			40	93 6480	95 5230	95 4860	96 4510	96 4180	97 108			42	95 7190	97 5780	97 5370	98 4980	98 4610	99 109			45	93 6940	95 5590	96 5190	96 4820	97 4460	97 108		
45	95 7500	97 6020	98 5590	98 5190	99 4800	99 109			46	94 7040	95 5670	96 5260	96 4880	97 4520	97 108			46	96 7610	97 6110	98 5670	98 5260	99 4870	99 109											

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	KIAS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	KIAS														
	10 KTS		WIND		10 KTS		20 KTS		30 KTS					10 KTS		WIND		10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT												
-30	89	3780	89	3040	89	2800	89	2580	89	2370	92 105	-30	90	3790	90	3050	90	2820	90	2590	90	2380	91 104																
-25	89	3840	89	3090	89	2850	89	2630	89	2410	92 105	-25	89	3850	89	3100	89	2860	89	2640	89	2420	91 104																
-20	89	3900	89	3140	89	2910	89	2690	89	2460	92 105	-20	89	3910	89	3150	89	2920	89	2690	89	2470	91 104																
-15	89	3970	89	3190	89	2960	89	2730	89	2510	92 105	-15	89	3970	89	3200	89	2970	89	2740	89	2520	91 104																
-10	89	4050	89	3240	89	3000	89	2770	89	2550	92 105	-10	89	4020	89	3250	89	3020	89	2790	89	2560	91 104																
-5	89	4120	89	3290	89	3050	89	2820	89	2600	92 105	-5	89	4090	89	3300	89	3060	89	2830	89	2610	91 104																
0	88	4140	88	3300	88	3060	88	2830	88	2600	92 105	0	88	4100	88	3310	88	3070	88	2840	88	2610	91 104																
5	87	4130	87	3300	87	3060	87	2830	87	2600	92 105	5	87	4090	87	3310	87	3070	87	2830	87	2610	91 103																
10	85	4080	85	3270	85	3030	85	2790	85	2570	92 104	10	86	4050	86	3270	86	3030	86	2800	86	2570	91 103																
15	83	4000	84	3260	84	3050	85	2850	85	2650	92 104	15	83	3980	83	3210	83	2970	83	2740	83	2510	90 102																
20	83	4120	85	3410	85	3190	86	2980	86	2770	92 103	20	81	3930	82	3210	83	3000	83	2800	84	2600	90 102																
25	84	4340	86	3580	86	3350	86	3130	87	2910	92 103	25	82	4060	83	3360	83	3140	84	2930	84	2720	90 101																
30	85	4580	86	3770	87	3530	87	3290	88	3070	92 103	30	83	4260	84	3530	84	3300	85	3080	85	2860	90 101																
35	86	4860	87	3980	88	3720	88	3480	88	3240	92 103	35	84	4500	85	3720	85	3480	86	3250	86	3020	90 101																
40	87	5160	88	4200	89	3940	89	3680	89	3430	92 103	40	84	4780	86	3930	86	3680	86	3440	87	3200	90 101																
45	87	5500	89	4460	89	4180	90	3910	90	3640	92 103	45	85	5090	87	4170	87	3900	87	3640	88	3390	90 101																
46	88	5570	89	4510	90	4230	90	3950	90	3690	92 103	46	86	5150	87	4220	87	3950	88	3690	88	3440	90 101																

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-30	90	3810	90	3060	90	2830	90	2610	90	2400	92 105	-30	90	3830	90	3090	90	2860	90	2640	90	2420	92 106																
-25	90	3860	90	3110	90	2880	90	2660	90	2440	92 105	-25	90	3880	90	3140	90	2910	90	2680	90	2470	92 106																
-20	90	3920	90	3170	90	2930	90	2710	90	2490	92 105	-20	90	3940	90	3190	90	2960	90	2730	90	2510	92 106																
-15	90	3980	90	3220	90	2980	90	2760	90	2540	92 105	-15	90	4000	90	3240	90	3010	90	2780	90	2560	92 106																
-10	89	4030	89	3270	89	3030	89	2800	89	2580	92 105	-10	90	4060	90	3290	90	3060	90	2830	90	2610	92 106																
-5	89	4090	89	3320	89	3080	89	2850	89	2630	92 105	-5	90	4110	90	3340	90	3100	90	2870	90	2650	92 106																
0	89	4100	89	3320	89	3080	89	2850	89	2630	91 104	0	89	4110	89	3340	89	3100	89	2870	89	2650	91 105																
5	87	4090	87	3320	87	3080	87	2850	87	2620	89 103	5	88	4110	88	3340	88	3100	88	2860	88	2640	90 104																
10	86	4050	86	3280	86	3040	86	2800	86	2580	89 102	10	86	4060	86	3290	86	3050	86	2820	86	2600	88 101																
15	84	3980	84	3210	84	2970	84	2740	84	2520	89 101	15	84	3980	84	3220	84	2980	84	2750	84	2530	87 100																
20	82	3910	82	3150	82	2910	82	2680	82	2460	89 100	20	82	3910	82	3150	82	2910	82	2680	82	2460	87 99																
25	80	3850	81	3160	81	2950	82	2750	82	2550	88 100	25	80	3840	80	3080	80	2840	80	2620	80	2400	87 99																
30	80	4000	81	3300	82	3090	82	2880	83	2670	88 99	30	78	3770	79	3100	79	2890	80	2690	80	2500	86 98																
35	81	4200	82	3470	83	3250	83	3030	83	2810	88 99	35	78	3930	80	3240	80	3030	80	2820	81	2620	86 98																
40	82	4430	83	3670	84	3430	84	3200	84	2980	88 99	40	79	4140	81	3420	81	3190	81	2970	82	2760	86 97																
45	83	4700	84	3890	84	3640	85	3390	85	3160	88 99	45	80	4380	82	3620	82	3380	82	3150	83	2930	86 97																
46	83	4760	84	3930	85	3680	85	3430	85	3190	88 99	46	81	4430	82	3660	82	3420	82	3190	83	2960	86 97																

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-30	91	3860	91	3120	91	2890	91	2670	91	2460	93	107	-30	91	3910	91	3170	91	2930	91	2710	91	2500	94	108	-30	91	3910	91	3170	91	2930	91	2710	91	2500	94	108	
-25	90	3920	90	3170	90	2940	90	2710	90	2500	93	107	-25	91	3960	91	3220	91	2980	91	2760	91	2540	94	108	-25	91	3960	91	3220	91	2980	91	2760	91	2540	94	108	
-20	90	3980	90	3220	90	2990	90	2760	90	2550	93	107	-20	91	4020	91	3270	91	3030	91	2810	91	2590	94	108	-20	91	4020	91	3270	91	3030	91	2810	91	2590	94	108	
-15	90	4040	90	3280	90	3040	90	2810	90	2590	93	107	-15	91	4080	91	3320	91	3090	91	2860	91	2640	94	108	-15	91	4080	91	3320	91	3090	91	2860	91	2640	94	108	
-10	90	4090	90	3330	90	3090	90	2860	90	2640	93	107	-10	91	4140	91	3370	91	3130	91	2900	91	2680	94	108	-10	91	4140	91	3370	91	3130	91	2900	91	2680	94	108	
-5	90	4140	90	3380	90	3140	90	2900	90	2680	93	107	-5	90	4190	90	3420	90	3180	90	2950	90	2720	94	108	-5	90	4190	90	3420	90	3180	90	2950	90	2720	94	108	
0	89	4140	89	3370	89	3130	89	2900	89	2680	92	106	0	90	4190	90	3420	90	3180	90	2940	90	2720	93	107	0	90	4190	90	3420	90	3180	90	2940	90	2720	93	107	
5	88	4130	88	3360	88	3120	88	2890	88	2670	91	104	5	88	4170	88	3400	88	3160	88	2930	88	2700	91	106	5	88	4170	88	3400	88	3160	88	2930	88	2700	91	106	
10	86	4080	86	3310	86	3070	86	2840	86	2620	89	102	10	87	4110	87	3340	87	3100	87	2870	87	2650	89	103	10	87	4110	87	3340	87	3100	87	2870	87	2650	89	103	
15	84	3990	84	3230	84	2990	84	2770	84	2550	86	100	15	85	4010	85	3250	85	3020	85	2790	85	2570	87	101	15	85	4010	85	3250	85	3020	85	2790	85	2570	87	101	
20	82	3910	82	3150	82	2920	82	2690	82	2470	85	98	20	83	3920	83	3170	83	2940	83	2710	83	2490	84	98	20	83	3920	83	3170	83	2940	83	2710	83	2490	84	98	
25	80	3830	80	3080	80	2850	80	2620	80	2400	85	97	25	80	3840	80	3090	80	2860	80	2630	80	2420	83	96	25	80	3840	80	3090	80	2860	80	2630	80	2420	83	96	
30	78	3760	78	3010	78	2780	78	2550	78	2340	85	97	30	78	3760	78	3010	78	2780	78	2560	78	2340	82	95	30	78	3760	78	3010	78	2780	78	2560	78	2340	82	95	
35	76	3690	77	3030	77	2830	78	2630	78	2440	84	96	35	76	3680	76	2940	76	2710	76	2480	76	2270	82	95	35	76	3680	76	2940	76	2710	76	2480	76	2270	82	95	
40	77	3860	78	3180	78	2970	79	2760	79	2560	84	96	40	74	3610	75	2960	76	2760	76	2560	77	2370	82	94	40	74	3610	75	2960	76	2760	76	2560	77	2370	82	94	
45	78	4080	79	3360	79	3130	80	2920	80	2710	84	95	45	75	3790	76	3110	76	2900	77	2690	77	2490	82	94	45	75	3790	76	3110	76	2900	77	2690	77	2490	82	94	
46	78	4120	79	3400	79	3170	80	2950	80	2740	84	95	46	75	3830	76	3140	77	2930	77	2720	77	2520	82	93	46	75	3830	76	3140	77	2930	77	2720	77	2520	82	93	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																
	10 KTS		WIND		10 KTS	20 KTS	30 KTS		10 KTS				WIND		10 KTS	20 KTS	30 KTS																						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST																			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	91	4390	94	3540	95	3300	95	3080	96	2870	102	112	-35	90	4240	93	3420	94	3200	94	2990	95	2780	101	111	-35	90	4240	93	3420	94	3200	94	2990	95	2780	101	111	
-30	91	4490	94	3620	95	3370	95	3150	96	2930	102	112	-30	90	4330	93	3490	94	3270	94	3050	95	2840	101	111	-30	90	4330	93	3490	94	3270	94	3050	95	2840	101	111	
-25	91	4590	94	3700	95	3440	95	3220	96	3000	102	112	-25	90	4420	93	3570	94	3330	94	3120	95	2900	101	111	-25	90	4420	93	3570	94	3330	94	3120	95	2900	101	111	
-20	91	4690	94	3790	95	3520	96	3280	96	3070	102	112	-20	90	4520	93	3660	94	3400	94	3180	95	2970	101	111	-20	90	4520	93	3660	94	3400	94	3180	95	2970	101	111	
-15	91	4810	94	3890	95	3610	96	3360	96	3140	102	112	-15	90	4630	93	3750	94	3480	94	3260	95	3040	101	111	-15	90	4630	93	3750	94	3480	94	3260	95	3040	101	111	
-10	91	4960	94	4010	95	3730	96	3460	96	3230	102	112	-10	90	4770	93	3860	94	3580	94	3350	95	3130	101	111	-10	90	4770	93	3860	94	3580	94	3350	95	3130	101	111	
-5	91	5110	94	4140	95	3850	96	3570	97	3330	102	112	-5	90	4920	93	3980	94	3700	95	3450	95	3220	101	111	-5	90	4920	93	3980	94	3700	95	3450	95	3220	101	111	
0	92	5320	95	4310	96	4000	96	3720	97	3460	102	112	0	91	5110	94	4140	94	3850	95	3570	96	3350	101	111	0	91	5110	94	4140	94	3850	95	3570	96	3350	101	111	
5	92	5530	95	4480	96	4170	97	3870	97	3580	102	112	5	91	5320	94	4310	95	4000	96	3720	96	3470	101	111	5	91	5320	94	4310	95	4000	96	3720	96	3470	101	111	
10	93	5850	96	4730	96	4400	97	4090	98	3780	102	112	10	92	5610	95	4540	95	4230	96	3920	97	3640	101	111	10	92	5610	95	4540	95	4230	96	3920	97	3640	101	111	
15	94	6190	96	5010	97	4650	98	4320	99	4000	102	112	15	93	5940	95	4800	96	4470	97	4150	97	3840	101	111	15	93	5940	95	4800	96	4470	97	4150	97	3840	101	111	
20	94	6580	97	5310	98	4930	98	4570	99	4240	102	112	20	93	6300	96	5090	97	4730	97	4390	98	4070	101	111	20	93	6300	96	5090	97	4730	97	4390	98	4070	101	111	
25	95	7000	98	5640	98	5240	99	4860	100	4500	102	112	25	94	6700	97	5410	97	5020	98	4660	99	4320	101	111	25	94	6700	97	5410	97	5020	98	4660	99	4320	101	111	
30	96	7470	98	6010	99	5580	100	5170	100	4790	102	112	30	95	7140	97	5750	98	5340	99	4960	99	4590	101	111	30	95	7140	97	5750	98	5340	99	4960	99	4590	101	111	
33	97	7790	99	6250	100	5800	100	5380	101	4980	102	112	35	96	7640	98	6140	99	5700	99	5290	100	4900	101	111	35	96	7640	98	6140	99	5700	99	5290	100	4900	101	111	
35	97	8010	99	6420	100	5960	100	5520	101	5110	102	112	39	97	8090	99	6490	99	6020	100	5580	100	5170	101	111	39	97	8090	99	6490	99	6020	100	5580	100	5170	101	111	

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-35	89	4020	91	3260	92	3040	92	2840	93	2640	99	110	-35	89	3970	89	3110	89	2890	90	2690	90	2500	98	109	-35	89	3970	89	3110	89	2890	90	2690	90	2500	98	109	
-30	89	4100	91	3320	92	3110	92	2900	93	2690	99	110	-30	89	4050	89	3160	89	2950	90	2750	90	2550	98	109	-30	89	4050	89	3160	89	2950	90	2750	90	2550	98	109	
-25	89	4180	91	3390	92	3170	92	2960	93	2750	99	110	-25	89	4130	89	3220	89	3010	90	2810	90	2610	98	109	-25	89	4130	89	3220	89	3010	90	2810	90	2610	98	109	
-20	88	4270	91	3460	92	3240	92	3020	93	2810	99	110	-20	88	4210	89	3280	89	3070	90	2870	90	2670	98	109	-20	88	4210	89	3280	89	3070	90	2870	90	2670	98	109	
-15	88	4360	91	3530	92	3310	92	3090	93	2880	99	110	-15	88	4270	89	3360	89	3140	90	2930	90	2730	98	109	-15	88	4270	89	3360	89	3140	90	2930	90	2730	98	109	
-10	88	4480	91	3630	92	3400	92	3180	93	2960	99	110	-10	88	4310	89	3440	90	3220	90	3010	91	2810	98	109	-10	88	4310	89	3440	90	3220	90	3010	91	2810	98	109	
-5	88	4610	91	3740	92	3490	93	3270	93	3050	99	110	-5	87	4340	89	3540	90	3310	90	3100	91	2890	98	109	-5	87	4340	89	3540	90	3310	90	3100	91	2890	98	109	
0	89	4790	92	3880	93	3610	93	3380	93	3160	99	110	0	87	4490	90	3650	90	3420	91	3200	91	2980	98	108	0	87	4490	90	3650	90	3420	91	3200	91	2980	98	108	
5	89	4970	92	4030	93	3750	93	3500	94	3270	99	110	5	87	4650	90	3770	91	3530	91	3310	91	3090	98	108	5	87	4650	90	3770	91	3530	91	3310	91	3090	98	108	
10	90	5240	93	4250	94	3950	94	3680	95	3440	99	110	10	88	4900	91	3970	91	3700	92	3470	92	3240	98	108	10	88	4900	91	3970	91	3700	92	3470	92	3240	98	108	
15	91	5540	93	4490	94	4180	95	3870	95	3620	99	110	15	89	5170	91	4190	92	3900	93	3650	93	3410	98	108	15	89	5170	91	4190	92	3900	93	3650	93	3410	98	108	
20	92	5870	94	4750	95	4410	96	4100	96	3810	99	110	20	90	5460	92	4430	93	4120	93	3840	94	3590	98	108	20	90	5460	92	4430	93	4120	93	3840	94	3590	98	108	
25	92	6230	95	5030	95	4680	96	4340	97	4030	99	110	25	91	5790	93	4690	94	4360	94	4050	95	3780	97	108	25	91	5790	93	4690	94	4360	94	4050	95	3780	97	108	
30	93	6630	96	5350	96	4970	97	4620	97	4280	99	110	30	91	6160	94	4980	94	4630	95	4300	95	4000	97	108	30	91	6160	94	4980	94	4630	95	4300	95	4000	97	108	
35	94	7080	96	5700	97	5300	97	4920	98	4560	99	109	35	92	6560	94	5300	95	4920	95	4570	96	4240	97	108	35	92	6560	94	5300	95	4920	95	4570	96	4240	97	108	
39	95	7470	97	6010	97	5590	98	5180	98	4800	99	109	40	93	7010	95	5650	96	5250	96	4880	97	4520	97	108	40	93	7010	95	5650	96	5250	96	4880	97	4520	97	108	
40	95	7580	97	6100	97	5660	98	5250	98	4870	99	109	42	93	7210	95	5810	96	5400	96	5010	97	4640	97	108	42	93	7210	95	5810	96	5400	96	5010	97	4640	97	108	
42	95	7800	97	6270	98	5820	98	5400	99	5000	99	109	44	94	7410	96	5970	96	5550	97	5150	97	4770	97	108	44	94	7410	96	5970	96	5550	97	5150	97	4770	97	108	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS																		
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S											
	10 KTS		WIND		10 KTS		20 KTS			30 KTS		10 KTS		WIND		10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2			
-35	90	3870	90	3110	90	2880	90	2650	90	2440	92	105	-35	90	3880	90	3130	90	2890	90	2670	90	2450	92	105
-30	90	3930	90	3160	90	2930	90	2700	90	2480	92	105	-30	90	3930	90	3180	90	2940	90	2710	90	2500	92	105
-25	90	4000	90	3220	90	2990	90	2750	90	2530	92	105	-25	90	3990	90	3230	90	2990	90	2760	90	2540	92	105
-20	89	4080	89	3270	89	3030	89	2790	89	2570	92	105	-20	90	4040	90	3280	90	3040	90	2810	90	2580	92	105
-15	89	4130	89	3300	89	3060	89	2830	89	2600	92	105	-15	89	4100	89	3310	89	3070	89	2840	89	2620	91	104
-10	88	4160	88	3320	88	3080	88	2850	88	2620	92	105	-10	89	4130	89	3330	89	3090	89	2860	89	2630	91	104
-5	87	4180	87	3340	87	3090	87	2860	87	2630	92	105	-5	88	4140	88	3340	88	3100	88	2870	88	2640	91	103
0	86	4170	86	3330	86	3080	86	2850	86	2620	92	104	0	87	4130	87	3330	87	3090	87	2850	87	2630	91	103
5	85	4160	85	3320	85	3080	85	2840	85	2610	92	104	5	85	4110	85	3320	85	3080	85	2840	85	2620	91	103
10	83	4080	84	3320	84	3110	85	2900	85	2700	92	104	10	83	4050	83	3270	83	3020	83	2790	83	2560	90	102
15	83	4190	85	3470	85	3250	86	3030	86	2820	92	103	15	81	3990	82	3270	83	3060	83	2850	84	2650	90	102
20	84	4400	85	3630	86	3400	86	3170	87	2960	92	103	20	82	4120	83	3410	83	3190	84	2980	84	2770	90	101
25	85	4650	86	3820	87	3580	87	3340	87	3120	92	103	25	82	4310	84	3570	84	3350	85	3120	85	2910	90	101
30	85	4920	87	4020	88	3770	88	3520	88	3290	92	103	30	83	4560	85	3770	85	3530	85	3290	86	3070	90	101
35	86	5220	88	4250	88	3980	89	3730	89	3480	92	103	35	84	4830	86	3970	86	3720	86	3480	87	3240	90	101
40	87	5550	89	4500	89	4220	90	3950	90	3680	92	103	40	85	5130	86	4200	87	3940	87	3680	87	3430	90	101
44	88	5840	90	4740	90	4430	90	4140	90	3870	92	103	44	86	5400	87	4410	87	4130	88	3860	88	3600	90	101

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	90 3890	90 3140	90 2910	90 2690	90 2470	92 106	-35	91 3920	91 3170	91 2940	91 2710	91 2500	93 107		
-30	90 3950	90 3190	90 2960	90 2730	90 2520	92 106	-30	91 3970	91 3220	91 2990	91 2760	91 2540	93 107		
-25	90 4000	90 3240	90 3010	90 2780	90 2560	92 106	-25	90 4030	90 3270	90 3030	90 2810	90 2590	93 107		
-20	90 4060	90 3290	90 3050	90 2820	90 2600	92 106	-20	90 4080	90 3320	90 3080	90 2850	90 2630	93 107		
-15	90 4100	90 3330	90 3090	90 2860	90 2630	92 105	-15	90 4120	90 3350	90 3110	90 2880	90 2660	92 106		
-10	89 4120	89 3340	89 3100	89 2870	89 2650	91 104	-10	89 4140	89 3370	89 3130	89 2890	89 2670	92 105		
-5	88 4130	88 3350	88 3110	88 2880	88 2650	90 103	-5	88 4150	88 3370	88 3130	88 2900	88 2680	91 104		
0	87 4120	87 3340	87 3100	87 2860	87 2640	89 102	0	87 4130	87 3360	87 3110	87 2880	87 2660	89 103		
5	86 4100	86 3330	86 3080	86 2850	86 2630	89 102	5	86 4110	86 3340	86 3100	86 2860	86 2640	88 101		
10	84 4040	84 3270	84 3020	84 2790	84 2570	89 101	10	84 4040	84 3270	84 3030	84 2800	84 2580	87 100		
15	82 3980	82 3210	82 2970	82 2740	82 2510	89 101	15	82 3980	82 3210	82 2970	82 2740	82 2520	87 99		
20	80 3920	80 3210	81 3000	81 2790	82 2600	88 100	20	80 3910	80 3150	80 2910	80 2680	80 2460	87 99		
25	80 4050	81 3350	82 3130	82 2920	83 2720	88 100	25	78 3850	79 3140	79 2930	80 2730	80 2540	86 98		
30	81 4250	82 3520	82 3290	83 3070	83 2860	88 99	30	78 3980	79 3290	80 3070	80 2860	81 2660	86 98		
35	82 4470	83 3710	83 3470	84 3240	84 3020	88 99	35	79 4180	80 3460	81 3230	81 3010	81 2800	86 97		
40	83 4750	84 3920	84 3670	85 3430	85 3190	88 99	40	80 4410	81 3650	82 3410	82 3180	82 2960	86 97		
44	84 4980	85 4110	85 3850	85 3590	86 3350	88 99	44	81 4610	82 3820	82 3580	83 3340	83 3100	86 97		

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-35	91 3960	91 3210	91 2970	91 2750	91 2530	94 108		-35	92 4010	92 3250	92 3020	92 2790	92 2580	95 109																	
-30	91 4010	91 3260	91 3020	91 2790	91 2580	94 108		-30	91 4060	91 3300	91 3070	91 2840	91 2620	95 109																	
-25	91 4060	91 3300	91 3070	91 2840	91 2620	94 108		-25	91 4110	91 3350	91 3110	91 2890	91 2660	94 109																	
-20	91 4120	91 3350	91 3110	91 2880	91 2660	94 108		-20	91 4170	91 3400	91 3160	91 2930	91 2710	94 109																	
-15	90 4160	90 3390	90 3150	90 2910	90 2690	93 107		-15	91 4200	91 3430	91 3190	91 2960	91 2730	94 108																	
-10	90 4170	90 3400	90 3160	90 2930	90 2700	92 106		-10	90 4210	90 3440	90 3200	90 2970	90 2740	93 107																	
-5	89 4170	89 3400	89 3160	89 2930	89 2700	91 105		-5	89 4210	89 3440	89 3200	89 2970	89 2740	92 106																	
0	87 4150	87 3380	87 3140	87 2910	87 2680	90 104		0	88 4190	88 3410	88 3170	88 2940	88 2720	91 105																	
5	86 4130	86 3360	86 3120	86 2890	86 2660	89 102		5	87 4160	87 3390	87 3150	87 2920	87 2690	89 103																	
10	84 4050	84 3290	84 3050	84 2820	84 2590	86 100		10	85 4070	85 3310	85 3070	85 2840	85 2620	87 101																	
15	82 3980	82 3220	82 2980	82 2750	82 2530	85 98		15	83 3990	83 3230	83 3000	83 2770	83 2550	84 98																	
20	80 3910	80 3150	80 2910	80 2680	80 2460	85 97		20	81 3910	81 3160	81 2920	81 2690	81 2480	83 96																	
25	78 3840	78 3080	78 2840	78 2620	78 2400	85 97		25	78 3840	78 3080	78 2850	78 2620	78 2410	82 95																	
30	76 3770	77 3070	77 2870	78 2670	78 2480	84 96		30	76 3760	76 3010	76 2780	76 2550	76 2340	82 95																	
35	76 3900	78 3220	78 3000	78 2800	79 2600	84 96		35	74 3690	75 3000	75 2790	76 2600	76 2410	82 94																	
40	77 4110	79 3390	79 3170	79 2950	80 2740	84 95		40	74 3820	76 3140	76 2930	77 2730	77 2530	82 94																	
44	78 4290	79 3550	80 3310	80 3090	80 2870	84 95		44	75 3990	76 3280	77 3060	77 2850	78 2640	82 93																	

Figure S24-4 (Sheet 12 of 12)

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

UNIT -0260 AND ON

SUPPLEMENT 25

AUSTRIAN REGISTERED AIRPLANES

This Airplane Flight Manual Supplement is approved by the US Federal Aviation Administration (FAA) on behalf of the Austrian Civil Aviation Administration.

APPROVED BY *C. D. Riddle*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL *5-22-96*

SUPPLEMENT 25

AUSTRIAN REGISTERED AIRPLANES

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	22 May 1996
Revision 1	30 July 1997

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S25-1 thru S25-2	Revised	1	S25-AA
S25-3 thru S25-4	Original	0	S25-AA
* S25-5 thru S25-6	Revised	1	S25-AA
S25-7 thru S25-8	Original	0	S25-AA
* S25-9 thru S25-63/S25-64	Revised	1	S25-AA

APPROVED BY 

for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 7/30/97

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S25-AA

Austrian Registered Airplanes

AUSTRIAN REGISTERED AIRPLANES

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Austrian Registered Airplanes. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

The takeoff performance data presented in this supplement will be used in place of those presented in the TAKEOFF portion of Section IV of the FAA Approved Airplane Flight Manual.

NOTE

Takeoff performance published in Pilot's Abbreviated Checklist 56CLA-06 dated 25 March 1997 or later revision, does not meet Austrian certification requirements and must NOT be used.

OPERATING LIMITATIONS

The Flitefone system must not be used in Europe.

AUTOPILOT

1. One pilot must remain in his seat with the seat belt fastened during all autopilot operations.
2. Autopilot operation is prohibited if any comparison monitor annunciator illuminates inflight.
3. Autopilot operation is prohibited below 200 feet AGL.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

No Change

NORMAL PROCEDURES

No Change

PERFORMANCE

Performance data remains the same as the basic approved airplane flight manual with the following exceptions.

TAKEOFF PERFORMANCE SIMPLIFIED CRITERIA

A simplified criteria is provided which is intended to cover the majority of situations where runway length is appreciably longer than required for this airplane. The other tabulated data gives more exact performance criteria through a range of conditions which include all but the most extreme cases.

The majority of takeoff situations results in field length margins that permit using a single set of values for speeds and power settings for takeoff. If the following conditions are met, the simplified procedures may be used.

1. No obstacle in flight path.
2. Anti-ice systems off.
3. Takeoff and approach flaps (15°).
4. Takeoff field length available = 5000 feet or longer.
5. No tail wind.
6. No runway gradient.
7. Dry paved runway.

The values to be used are as follows:

WEIGHT	16,300 POUNDS OR LESS	15,500 POUNDS OR LESS	14,500 POUNDS OR LESS
ALTITUDE OF AIRPORT	2000 FEET OR BELOW	4000 FEET OR BELOW	6000 FEET OR BELOW
AMBIENT TEMPERATURE BETWEEN	12°C AND 40°C	16°C AND 35°C	16°C AND 35°C
V ₁	93 KIAS	90 KIAS	88 KIAS
V _R	102 KIAS	99 KIAS	96 KIAS
V ₂	112 KIAS	110 KIAS	106 KIAS
SINGLE-ENGINE CLIMB SPEED	160 KIAS	160 KIAS	160 KIAS
TAKEOFF N ₁	95.3% RPM	96% RPM	96% RPM
SINGLE-ENGINE CLIMB N ₁	90.8% RPM	91.6% RPM	91.6% RPM

When conditions are other than those specified in the simplified criteria, the appropriate tabulated data must be referred to.

PROCEDURES FOR USE OF TAKEOFF PERFORMANCE TABLES

1. Determine gross weight of airplane for type of loading desired.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient (if applicable) and obstacles in the takeoff flight path.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum takeoff weight permitted by climb requirements (Figure 4-13 or Figure 4-15). If takeoff is to be made with anti-ice on, refer to Figure 4-14 or Figure 4-16. If this limitation restricts the gross weight, the pilot must off load weight until the requirement is met.
5. Using the takeoff weight determined in step 4, determine takeoff field length, V_1 , V_R , V_2 , V_{ENR} from Figure S25-2 (Flaps 7°) or Figure S25-4 (Flaps 15°).
6. For anti-ice on or runway gradients, V_1 and takeoff field length must be corrected using the correction table in Figure S25-1 (Flaps 7°), or Figure S25-3 (Flaps 15°).
7. If the available runway length is less than the required field length, the airplane weight must be reduced until this requirement can be met.
8. If the obstacle clearance is a factor, the single-engine takeoff flight path charts (Figures 4-21 or 4-23 and 4-24 or 4-26) must be used to determine if the obstacle can be cleared. If the obstacle cannot be cleared, the gross weight must be reduced until the flight path assures obstacle clearance.

NOTE

During third segment acceleration, if after five (5) minutes, enroute climb speed (single-engine) has not been attained, hold attained airspeed, set power to maximum continuous thrust and begin final segment climb. The single-engine takeoff flight path distances of Figure 4-23 or 4-26 will be met.

9. Determine thrust settings for takeoff (Figure 4-9) and enroute climb (single-engine) (Figure 4-10).
10. The first segment takeoff net climb and enroute net climb gradient tables, Figures 4-27, 4-28 and 4-31, are for advisory information only.

NOTE

- For inoperative antiskid system, multiply the takeoff field lengths obtained from Figure S25-2 and S25-4 by 1.25.

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 7°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure S25-2 and correct for runway gradient and anti-icing requirements using the tables below.

If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 7°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT				
RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1^*	MULTIPLY DISTANCE BY	V_1^*	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.7 **	ADD 4 KNOTS	1.7 **
1% UPHILL	ADD 2 KNOTS	1.2 **	ADD 2 KNOTS	1.2 **
1% DOWNHILL	SUBTRACT 4 KNOTS	1.0	ADD 1 KNOT	1.04
2% DOWNHILL	SUBTRACT 6 KNOTS	1.0	ADD 1 KNOT	1.05

CORRECTION FACTORS - ANTI-ICE ON	
V_1 - KIAS	NO CORRECTION
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.15

* If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .

** Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

NOTE: Downhill takeoff with a tailwind and a gross weight of 15,000 pounds or greater is prohibited.

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 7000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure S25-2, the Takeoff Field Length is 4140.

V_1 is 97 KNOTS
 V_R is 106 KNOTS
 V_2 is 116 KNOTS
 V_{ENR} is 160 KNOTS

Figure S25-1

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO		HEADWINDS				TEMP DEG C	TAILWIND		ZERO		HEADWINDS				TEMP DEG C	TAILWIND		ZERO		HEADWINDS											
	10 KTS		WIND		10 KTS		20 KTS			30 KTS		10 KTS		WIND		10 KTS			20 KTS		30 KTS		10 KTS		WIND		10 KTS		20 KTS		30 KTS			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	VR	V2		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-25	89	3880	93	3160	94	2950	95	2730	96	2530	107	117	-25	88	3760	92	3060	93	2850	94	2640	94	2450	105	116	-25	88	3760	92	3060	93	2850	94	2640
-20	89	3950	93	3230	94	3000	95	2790	96	2590	107	117	-20	88	3820	91	3120	92	2900	93	2700	94	2500	105	116	-20	88	3820	91	3120	92	2900	93	2700
-15	89	4020	93	3290	94	3060	95	2850	96	2640	107	117	-15	88	3890	91	3180	92	2960	93	2750	94	2550	105	116	-15	88	3890	91	3180	92	2960	93	2750
-10	89	4090	93	3350	94	3120	95	2900	96	2690	107	117	-10	88	3950	91	3240	92	3020	93	2800	94	2600	106	116	-10	88	3950	91	3240	92	3020	93	2800
-5	89	4160	92	3410	94	3180	95	2960	95	2750	107	117	-5	88	4020	91	3290	92	3070	93	2860	94	2650	106	116	-5	88	4020	91	3290	92	3070	93	2860
0	89	4230	92	3470	93	3240	94	3020	95	2800	107	117	0	87	4090	91	3350	92	3130	93	2910	94	2710	105	116	0	87	4090	91	3350	92	3130	93	2910
5	89	4300	92	3530	93	3300	94	3070	95	2860	107	117	5	87	4160	91	3420	92	3190	93	2970	94	2760	105	116	5	87	4160	91	3420	92	3190	93	2970
10	89	4370	92	3600	93	3360	94	3130	95	2910	107	117	10	87	4230	91	3480	92	3250	93	3020	94	2810	105	116	10	87	4230	91	3480	92	3250	93	3020
15	88	4450	92	3660	93	3420	94	3190	95	2970	107	117	15	87	4300	91	3540	92	3300	93	3080	94	2870	105	116	15	87	4300	91	3540	92	3300	93	3080
20	89	4550	92	3750	93	3510	94	3270	95	3040	107	117	20	87	4400	91	3620	92	3390	93	3160	94	2940	105	116	20	87	4400	91	3620	92	3390	93	3160
25	89	4650	93	3840	94	3590	95	3350	96	3120	107	117	25	88	4500	91	3710	92	3470	93	3240	94	3010	105	116	25	88	4500	91	3710	92	3470	93	3240
30	90	4880	94	4020	95	3760	96	3510	97	3270	106	116	30	89	4710	92	3890	93	3630	94	3390	95	3160	105	115	30	89	4710	92	3890	93	3630	94	3390
35	92	5150	95	4250	96	3970	97	3710	98	3450	106	116	35	90	4970	94	4100	95	3830	96	3580	96	3330	105	115	35	90	4970	94	4100	95	3830	96	3580
40	93	5450	96	4500	97	4200	98	3920	99	3650	106	116	40	92	5260	95	4340	96	4050	97	3780	98	3520	105	115	40	92	5260	95	4340	96	4050	97	3780
45	94	5790	98	4770	98	4460	99	4160	100	3880	106	116	45	93	5590	96	4600	97	4300	98	4010	99	3740	105	115	45	93	5590	96	4600	97	4300	98	4010
50	96	6170	99	5080	100	4750	101	4430	101	4130	106	116	50	95	5940	98	4890	99	4570	99	4270	100	3970	105	115	50	95	5940	98	4890	99	4570	99	4270
54	97	6500	100	5340	101	4990	101	4660	102	4340	106	116	54	96	6250	99	5140	99	4810	100	4490	101	4180	105	115	54	96	6250	99	5140	99	4810	100	4490

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS														
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS															
	10 KTS				10 KTS		20 KTS			30 KTS		10 KTS				10 KTS			20 KTS		30 KTS		10 KTS				10 KTS		20 KTS		30 KTS							
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	VR	V2 KIAS						
-25	88	3690	89	2900	90	2690	91	2500	92	2310	104	114	-25	88	3680	88	2800	88	2550	89	2370	90	2190	102	113	-25	88	3680	88	2800	88	2550	89	2370	90	2190	102	113
-20	88	3760	89	2950	90	2750	91	2550	92	2360	104	114	-20	88	3740	88	2850	88	2600	89	2410	90	2240	102	113	-20	88	3740	88	2850	88	2600	89	2410	90	2240	102	113
-15	88	3830	89	3000	90	2800	91	2600	92	2410	104	114	-15	88	3810	88	2910	88	2650	89	2460	90	2280	102	113	-15	88	3810	88	2910	88	2650	89	2460	90	2280	102	113
-10	87	3900	89	3060	90	2850	91	2650	92	2450	104	114	-10	88	3880	88	2960	88	2700	89	2510	89	2330	102	113	-10	88	3880	88	2960	88	2700	89	2510	89	2330	102	113
-5	87	3970	89	3110	90	2900	91	2700	92	2500	104	114	-5	88	3950	88	3020	88	2750	89	2560	89	2370	102	113	-5	88	3950	88	3020	88	2750	89	2560	89	2370	102	113
0	87	4030	89	3170	90	2960	91	2750	92	2550	104	114	0	88	4010	88	3070	88	2800	88	2600	89	2420	102	113	0	88	4010	88	3070	88	2800	88	2600	89	2420	102	113
5	87	4100	89	3230	90	3010	91	2800	92	2600	104	114	5	87	4080	87	3120	87	2850	88	2650	89	2460	102	113	5	87	4080	87	3120	87	2850	88	2650	89	2460	102	113
10	87	4170	89	3280	90	3070	91	2850	92	2650	104	114	10	87	4140	87	3170	87	2900	88	2700	89	2510	102	113	10	87	4140	87	3170	87	2900	88	2700	89	2510	102	113
15	87	4240	88	3340	90	3120	91	2900	92	2700	104	114	15	87	4210	87	3220	87	2950	88	2750	89	2550	102	113	15	87	4210	87	3220	87	2950	88	2750	89	2550	102	113
20	87	4260	89	3420	90	3190	91	2980	92	2770	104	114	20	87	4240	87	3240	88	3020	88	2810	89	2620	102	112	20	87	4240	87	3240	88	3020	88	2810	89	2620	102	112
25	86	4290	89	3500	90	3270	91	3050	92	2840	104	114	25	86	4260	87	3300	88	3090	89	2880	90	2680	102	112	25	86	4260	87	3300	88	3090	89	2880	90	2680	102	112
30	87	4440	90	3660	91	3420	92	3190	93	2970	104	114	30	84	4180	88	3450	89	3220	90	3000	91	2800	102	112	30	84	4180	88	3450	89	3220	90	3000	91	2800	102	112
35	88	4680	92	3860	92	3610	93	3370	94	3130	104	114	35	86	4410	89	3630	90	3390	91	3160	92	2940	102	112	35	86	4410	89	3630	90	3390	91	3160	92	2940	102	112
40	90	4950	93	4080	94	3810	95	3560	95	3310	104	114	40	88	4650	91	3840	92	3580	92	3340	93	3110	102	112	40	88	4650	91	3840	92	3580	92	3340	93	3110	102	112
45	91	5250	94	4330	95	4040	96	3770	97	3510	104	114	45	89	4930	92	4060	93	3800	94	3540	94	3300	102	112	45	89	4930	92	4060	93	3800	94	3540	94	3300	102	112
50	93	5580	96	4600	96	4300	97	4010	98	3730	104	114	50	91	5240	93	4310	94	4030	95	3760	96	3500	102	112	50	91	5240	93	4310	94	4030	95	3760	96	3500	102	112
54	94	5860	97	4830	97	4510	98	4210	99	3920	104	114	54	92	5500	94	4530	95	4230	96	3940	97	3670	102	112	54	92	5500	94	4530	95	4230	96	3940	97	3670	102	112

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2										
	10 KTS				20 KTS		30 KTS					10 KTS				20 KTS		30 KTS													
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT				V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT												
-25	88	3660	88	2800	88	2550	88	2320	88	2100	100	111	-25	88	3660	88	2800	88	2560	88	2330	88	2110	98	110						
-20	88	3730	88	2850	88	2600	88	2370	88	2150	100	111	-20	88	3720	88	2850	88	2600	88	2370	88	2150	98	110						
-15	88	3800	88	2910	88	2650	88	2410	88	2190	100	111	-15	88	3790	88	2910	88	2650	88	2420	88	2200	98	110						
-10	88	3860	88	2960	88	2700	88	2460	88	2230	100	111	-10	88	3850	88	2960	88	2700	88	2460	88	2240	98	110						
-5	88	3930	88	3010	88	2750	88	2500	88	2280	100	111	-5	88	3920	88	3010	88	2750	88	2510	88	2280	98	110						
0	88	3990	88	3060	88	2800	88	2550	88	2320	100	111	0	88	3980	88	3060	88	2800	88	2550	88	2320	98	110						
5	88	4060	88	3110	88	2840	88	2590	88	2360	100	111	5	88	4040	88	3110	88	2840	88	2600	88	2360	98	110						
10	88	4120	88	3160	88	2890	88	2640	88	2400	100	111	10	88	4110	88	3160	88	2890	88	2640	88	2400	98	110						
15	88	4190	88	3220	88	2940	88	2680	88	2440	100	111	15	88	4170	88	3210	88	2940	88	2680	88	2450	98	110						
20	87	4210	87	3240	87	2960	87	2700	87	2470	100	111	20	87	4200	87	3230	87	2960	87	2700	87	2460	98	110						
25	86	4240	86	3260	86	2980	86	2720	87	2530	100	111	25	87	4220	87	3250	87	2970	87	2720	87	2480	98	110						
30	85	4140	85	3250	86	3040	87	2830	88	2630	100	111	30	85	4120	85	3170	85	2900	85	2670	86	2480	98	109						
35	84	4150	87	3410	88	3190	89	2970	90	2760	100	110	35	82	3990	84	3210	85	3000	86	2790	87	2590	98	109						
40	85	4370	88	3600	89	3370	90	3140	91	2920	100	110	40	83	4110	86	3380	87	3160	88	2940	88	2730	98	109						
45	87	4630	90	3810	91	3560	91	3320	92	3090	100	110	45	85	4340	87	3570	88	3340	89	3110	90	2890	98	109						
50	89	4910	91	4040	92	3780	93	3520	93	3280	100	110	50	86	4600	89	3790	90	3540	90	3300	91	3060	98	108						
54	90	5150	92	4240	93	3960	94	3690	94	3440	100	110	54	87	4820	90	3970	91	3710	91	3450	92	3210	98	108						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2								
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS										
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-25	89	3650	89	2810	89	2560	89	2340	89	2120	97 109	-25	89	3650	89	2820	89	2580	89	2350	89	2140	95 107								
-20	89	3720	89	2860	89	2610	89	2380	89	2170	97 109	-20	89	3720	89	2870	89	2620	89	2400	89	2180	95 107								
-15	89	3780	89	2910	89	2660	89	2430	89	2210	97 109	-15	89	3780	89	2920	89	2670	89	2440	89	2220	95 107								
-10	88	3850	88	2960	88	2710	88	2470	88	2250	97 109	-10	89	3850	89	2970	89	2720	89	2490	89	2270	95 107								
-5	88	3910	88	3020	88	2760	88	2520	88	2290	97 109	-5	89	3910	89	3020	89	2770	89	2530	89	2310	95 107								
0	88	3970	88	3060	88	2800	88	2560	88	2330	97 109	0	89	3970	89	3070	89	2810	89	2570	89	2350	95 107								
5	88	4030	88	3110	88	2850	88	2600	88	2370	97 109	5	88	4030	88	3120	88	2860	88	2610	88	2390	95 107								
10	88	4100	88	3170	88	2900	88	2650	88	2410	97 109	10	88	4090	88	3170	88	2910	88	2660	88	2430	95 107								
15	88	4160	88	3220	88	2950	88	2690	88	2460	97 109	15	88	4160	88	3220	88	2950	88	2700	88	2470	95 107								
20	87	4180	87	3230	87	2960	87	2710	87	2470	97 108	20	88	4180	88	3240	88	2970	88	2720	88	2480	95 107								
25	87	4200	87	3250	87	2980	87	2720	87	2480	96 108	25	87	4190	87	3250	87	2980	87	2730	87	2490	95 107								
30	85	4100	85	3170	85	2900	85	2650	85	2420	96 108	30	85	4090	85	3170	85	2900	85	2660	85	2420	95 106								
35	83	3970	83	3070	83	2820	84	2630	85	2440	96 107	35	83	3960	83	3060	83	2800	83	2560	83	2340	94 106								
40	80	3850	83	3170	84	2960	85	2750	86	2560	96 107	40	81	3820	81	2970	82	2780	82	2590	83	2400	94 105								
45	82	4070	85	3350	86	3120	87	2910	87	2700	96 107	45	79	3810	82	3130	83	2920	84	2720	85	2520	94 105								
50	84	4310	86	3540	87	3310	88	3080	89	2860	96 107	50	81	4030	84	3310	85	3090	85	2870	86	2670	94 105								
54	85	4510	88	3710	88	3460	89	3230	90	3000	96 107	54	83	4220	85	3460	86	3230	86	3010	87	2790	94 105								

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-25	89 3660	89 2830	89 2590	89 2370	89 2160	94 107		-25	90 3680	90 2860	90 2620	90 2390	90 2180	94 108																	
-20	89 3730	89 2890	89 2640	89 2410	89 2200	94 107		-20	90 3740	90 2910	90 2670	90 2440	90 2230	94 108																	
-15	89 3790	89 2940	89 2690	89 2460	89 2240	94 107		-15	89 3800	89 2960	89 2710	89 2480	89 2270	94 108																	
-10	89 3850	89 2990	89 2740	89 2500	89 2280	94 107		-10	89 3870	89 3010	89 2760	89 2530	89 2310	94 108																	
-5	89 3920	89 3040	89 2790	89 2550	89 2330	94 107		-5	89 3930	89 3060	89 2810	89 2570	89 2350	94 108																	
0	89 3980	89 3090	89 2830	89 2590	89 2370	94 107		0	89 3990	89 3110	89 2850	89 2610	89 2390	94 108																	
5	89 4040	89 3140	89 2880	89 2630	89 2400	93 107		5	89 4050	89 3160	89 2900	89 2660	89 2430	94 107																	
10	89 4100	89 3190	89 2920	89 2680	89 2450	93 106		10	89 4110	89 3210	89 2940	89 2700	89 2470	94 107																	
15	89 4160	89 3240	89 2970	89 2720	89 2490	93 106		15	89 4170	89 3250	89 2990	89 2740	89 2510	94 107																	
20	88 4180	88 3250	88 2980	88 2730	88 2500	93 106		20	88 4180	88 3270	88 3000	88 2750	88 2520	93 107																	
25	87 4190	87 3260	87 2990	87 2740	87 2510	93 106		25	88 4200	88 3280	88 3010	88 2760	88 2530	93 106																	
30	86 4080	86 3180	86 2910	86 2670	86 2440	93 105		30	86 4080	86 3190	86 2930	86 2680	86 2450	91 104																	
35	83 3940	83 3060	83 2810	83 2570	83 2340	93 104		35	84 3940	84 3070	84 2820	84 2580	84 2360	91 103																	
40	81 3810	81 2950	81 2700	81 2470	81 2250	92 104		40	81 3800	81 2950	81 2710	81 2480	81 2260	90 102																	
45	78 3670	80 2930	80 2730	81 2540	82 2360	92 103		45	79 3660	79 2840	79 2600	79 2370	79 2200	90 102																	
50	79 3760	81 3090	82 2880	83 2680	83 2490	92 103		50	76 3530	78 2880	79 2680	80 2490	81 2310	90 101																	
54	80 3930	82 3230	83 3010	84 2800	84 2600	92 103		54	77 3660	80 3000	80 2800	81 2600	82 2410	90 101																	

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-25	90 3700	90 2890	90 2650	90 2430	90 2220	95 109		-25	90 3740	90 2930	90 2690	90 2460	90 2250	96 110																	
-20	90 3760	90 2940	90 2700	90 2470	90 2260	95 109		-20	90 3800	90 2970	90 2730	90 2510	90 2300	96 110																	
-15	90 3830	90 2990	90 2740	90 2510	90 2300	95 109		-15	90 3860	90 3030	90 2780	90 2550	90 2340	96 110																	
-10	90 3890	90 3040	90 2790	90 2560	90 2340	95 109		-10	90 3920	90 3080	90 2830	90 2600	90 2380	96 110																	
-5	90 3950	90 3090	90 2840	90 2600	90 2380	95 109		-5	90 3980	90 3130	90 2880	90 2640	90 2420	96 110																	
0	90 4010	90 3140	90 2880	90 2640	90 2420	95 109		0	90 4040	90 3170	90 2920	90 2680	90 2460	96 110																	
5	89 4070	89 3180	89 2930	89 2690	89 2460	95 108		5	90 4100	90 3220	90 2960	90 2720	90 2500	95 110																	
10	89 4130	89 3230	89 2970	89 2730	89 2500	95 108		10	90 4160	90 3270	90 3010	90 2770	90 2540	95 109																	
15	89 4190	89 3280	89 3020	89 2770	89 2540	95 108		15	90 4220	90 3320	90 3060	90 2810	90 2580	95 109																	
20	89 4200	89 3290	89 3030	89 2780	89 2550	94 108		20	89 4230	89 3330	89 3060	89 2820	89 2590	95 109																	
25	88 4210	88 3300	88 3040	88 2790	88 2560	93 107		25	88 4240	88 3330	88 3070	88 2820	88 2590	94 108																	
30	86 4090	86 3210	86 2950	86 2700	86 2480	91 104		30	87 4110	87 3230	87 2970	87 2730	87 2510	92 105																	
35	84 3940	84 3080	84 2830	84 2600	84 2370	89 102		35	84 3950	84 3100	84 2850	84 2620	84 2400	89 102																	
40	81 3790	81 2960	81 2720	81 2490	81 2270	88 101		40	82 3800	82 2970	82 2730	82 2500	82 2290	86 99																	
45	79 3650	79 2840	79 2600	79 2380	79 2170	88 100		45	79 3650	79 2850	79 2610	79 2390	79 2180	86 99																	
50	76 3520	76 2730	76 2500	77 2330	78 2160	88 100		50	77 3510	77 2730	77 2500	77 2290	77 2090	86 98																	
54	74 3420	77 2790	77 2600	78 2420	79 2240	88 99		54	75 3410	75 2650	75 2420	75 2250	76 2080	86 98																	

Figure S25-2 (Sheet 2 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S									
					10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS					
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						
	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS	VR V2 KIAS															
-25	89	3980	92	3260	93	3030	94	2820	95	2610	107	117	-25	88	3870	91	3150	92	2930	93	2720	94	2530	106	116
-20	89	4050	92	3320	93	3090	94	2880	95	2670	107	117	-20	88	3940	91	3210	92	2990	93	2780	94	2580	106	116
-15	89	4130	92	3380	93	3150	94	2930	95	2720	107	117	-15	88	4010	91	3270	92	3050	93	2840	94	2630	106	116
-10	88	4200	92	3440	93	3210	94	2990	95	2780	107	117	-10	88	4090	91	3330	92	3110	93	2890	94	2690	106	116
-5	88	4270	92	3510	93	3270	94	3050	95	2840	107	117	-5	87	4160	91	3390	92	3160	93	2950	94	2740	106	116
0	88	4340	92	3570	93	3330	94	3110	95	2890	107	117	0	87	4240	91	3450	92	3220	93	3000	94	2790	106	116
5	88	4410	92	3630	93	3400	94	3170	95	2950	107	117	5	87	4310	90	3510	92	3280	93	3060	94	2850	106	116
10	88	4490	92	3700	93	3460	94	3230	95	3000	107	117	10	87	4390	90	3570	91	3340	93	3120	93	2900	106	116
15	88	4590	92	3790	93	3550	94	3310	95	3080	107	117	15	87	4440	91	3660	92	3420	93	3200	94	2980	105	116
20	89	4750	93	3930	94	3670	95	3430	96	3190	107	117	20	88	4590	91	3790	92	3550	93	3310	94	3080	105	116
25	90	4940	93	4080	94	3810	95	3560	96	3320	107	116	25	88	4770	92	3940	93	3680	94	3440	95	3200	105	115
30	91	5210	95	4300	96	4020	97	3760	97	3500	106	116	30	90	5020	93	4150	94	3880	95	3620	96	3380	105	115
35	92	5500	96	4540	97	4250	98	3970	99	3700	106	116	35	91	5310	95	4380	96	4100	96	3830	97	3570	105	115
40	94	5840	97	4820	98	4500	99	4210	100	3920	106	116	40	93	5630	96	4640	97	4340	98	4050	98	3780	105	115
45	98	6210	98	5120	99	4790	100	4470	101	4170	106	116	45	94	5980	97	4930	98	4610	99	4310	100	4010	105	115
50	97	6620	100	5450	100	5100	101	4760	102	4440	106	116	50	96	6370	98	5250	99	4910	100	4580	101	4270	105	115
52	97	6790	100	5590	101	5230	102	4880	102	4550	106	116	52	96	6540	99	5380	100	5030	100	4700	101	4380	105	115

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR	V2 KIAS		
			10 KTS	20 KTS	30 KTS	10 KTS						20 KTS	30 KTS						
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT						
-25	88 3850	89 2980	90 2770	91 2580	92 2390	104 114			-25	88 3830	88 2920	88 2660	88 2440	89 2260	102 113				
-20	88 3920	89 3040	90 2830	91 2630	92 2440	104 114			-20	88 3900	88 2980	88 2710	88 2490	89 2310	102 113				
-15	88 3990	88 3090	90 2880	91 2680	91 2490	104 114			-15	88 3970	88 3030	88 2770	88 2540	89 2350	102 113				
-10	88 4060	88 3150	89 2940	90 2730	91 2540	104 114			-10	88 4040	88 3090	88 2820	88 2590	89 2400	102 113				
-5	88 4140	88 3210	89 2990	90 2790	91 2590	104 114			-5	88 4110	88 3150	88 2870	88 2630	89 2450	102 113				
0	88 4210	88 3260	89 3050	90 2840	91 2630	104 114			0	88 4190	88 3200	88 2930	88 2680	89 2490	102 113				
5	88 4280	88 3320	89 3100	90 2890	91 2690	104 114			5	88 4260	88 3260	88 2980	88 2730	89 2540	102 113				
10	87 4360	88 3380	89 3160	90 2940	91 2740	104 114			10	88 4330	88 3320	88 3030	88 2780	89 2590	102 113				
15	87 4390	88 3460	89 3230	90 3010	91 2800	104 114			15	87 4360	87 3340	87 3050	88 2850	89 2650	102 113				
20	86 4360	89 3570	90 3340	91 3120	92 2900	104 114			20	86 4330	87 3370	88 3150	89 2940	90 2740	102 112				
25	86 4490	90 3710	91 3470	92 3240	93 3020	104 114			25	85 4280	87 3490	89 3260	89 3050	90 2840	102 112				
30	88 4730	91 3910	92 3650	93 3410	94 3180	104 114			30	86 4450	89 3680	90 3440	91 3210	92 2990	102 112				
35	89 4990	92 4120	93 3860	94 3600	95 3350	104 114			35	87 4690	90 3880	91 3620	92 3380	93 3150	102 112				
40	91 5290	94 4360	95 4080	95 3810	96 3550	104 114			40	89 4970	92 4100	92 3830	93 3580	94 3330	102 112				
45	92 5620	95 4630	96 4330	97 4040	97 3770	104 114			45	90 5270	93 4350	94 4060	95 3790	95 3530	102 112				
50	94 5970	96 4920	97 4600	98 4300	99 4000	104 114			50	92 5600	94 4620	95 4310	96 4030	96 3750	102 112				
52	94 6120	97 5050	98 4720	98 4400	99 4100	104 114			52	92 5740	95 4730	95 4420	96 4130	97 3840	102 112				

WEIGHT = 14500 LBS										VENR = 160 KIAS				WEIGHT = 14000 LBS														VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS						
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS									
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT								V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT								
-25	88	3820	88	2920	88	2660	88	2430	88	2200	100	111	-25	89	3810	89	2920	89	2670	89	2430	89	2210	98	110						
-20	88	3880	88	2980	88	2710	88	2470	88	2250	100	111	-20	89	3870	89	2980	89	2720	89	2480	89	2250	98	110						
-15	88	3950	88	3030	88	2770	88	2520	88	2290	100	111	-15	88	3940	88	3030	88	2770	88	2530	88	2300	98	110						
-10	88	4030	88	3090	88	2820	88	2570	88	2340	100	111	-10	88	4010	88	3090	88	2820	88	2570	88	2340	98	110						
-5	88	4100	88	3140	88	2870	88	2620	88	2380	100	111	-5	88	4080	88	3140	88	2870	88	2620	88	2390	98	110						
0	88	4170	88	3200	88	2920	88	2670	88	2430	100	111	0	88	4150	88	3200	88	2920	88	2670	88	2430	98	110						
5	88	4240	88	3250	88	2970	88	2710	88	2470	100	111	5	88	4220	88	3250	88	2980	88	2720	88	2480	98	110						
10	88	4310	88	3310	88	3030	88	2760	88	2520	100	111	10	88	4290	88	3310	88	3030	88	2760	88	2520	98	110						
15	87	4340	87	3330	87	3050	87	2780	87	2530	100	111	15	88	4320	88	3330	88	3050	88	2780	88	2540	98	110						
20	86	4300	86	3310	86	3020	86	2780	87	2580	100	111	20	86	4280	86	3300	86	3020	86	2760	86	2520	98	110						
25	85	4250	85	3290	86	3080	87	2870	88	2670	100	111	25	85	4230	85	3260	85	2980	85	2720	86	2520	98	109						
30	83	4190	86	3450	87	3230	88	3010	89	2800	100	110	30	83	4100	84	3250	85	3040	86	2830	87	2630	98	109						
35	85	4410	88	3640	89	3400	90	3170	90	2950	100	110	35	82	4140	85	3410	86	3190	87	2970	88	2770	98	109						
40	86	4660	89	3850	90	3590	91	3350	92	3120	100	110	40	84	4370	87	3610	88	3370	89	3140	89	2920	98	109						
45	88	4940	91	4080	91	3810	92	3550	93	3310	100	110	45	86	4630	88	3820	89	3570	90	3330	91	3090	98	108						
50	89	5240	92	4320	93	4040	93	3770	94	3510	100	110	50	87	4910	90	4040	90	3780	91	3520	92	3280	98	108						
52	90	5370	92	4430	93	4140	94	3860	95	3600	100	110	52	88	5030	90	4140	91	3870	92	3610	92	3360	98	108						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS										
	10 KTS	V1 DIST		20 KTS	30 KTS	10 KTS			V1 DIST	20 KTS		30 KTS													
	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT													
-25	89	3800	89	2930	89	2680	89	2440	89	2220	97	109	-25	89	3800	89	2940	89	2690	89	2460	89	2240	95	107
-20	89	3870	89	2980	89	2730	89	2490	89	2270	97	109	-20	89	3870	89	2990	89	2740	89	2500	89	2280	95	107
-15	89	3940	89	3040	89	2780	89	2540	89	2310	97	109	-15	89	3940	89	3050	89	2790	89	2550	89	2320	95	107
-10	89	4010	89	3090	89	2830	89	2580	89	2350	97	109	-10	89	4010	89	3100	89	2840	89	2600	89	2370	95	107
-5	89	4080	89	3150	89	2880	89	2630	89	2400	97	109	-5	89	4070	89	3160	89	2890	89	2640	89	2410	95	107
0	89	4140	89	3200	89	2930	89	2680	89	2440	97	109	0	89	4140	89	3210	89	2940	89	2690	89	2460	95	107
5	88	4210	88	3260	88	2980	88	2730	88	2490	97	109	5	89	4210	89	3260	89	2990	89	2740	89	2500	95	107
10	88	4280	88	3310	88	3030	88	2770	88	2530	97	109	10	89	4270	89	3320	89	3040	89	2780	89	2540	95	107
15	88	4300	88	3330	88	3050	88	2790	88	2550	97	109	15	88	4300	88	3330	88	3060	88	2800	88	2560	95	107
20	87	4270	87	3300	87	3020	87	2760	87	2520	96	108	20	87	4260	87	3300	87	3030	87	2770	87	2530	95	107
25	85	4210	85	3260	85	2980	85	2730	85	2490	96	108	25	86	4200	86	3260	86	2980	86	2730	86	2490	95	107
30	83	4080	83	3150	83	2890	83	2660	84	2480	96	107	30	83	4060	83	3150	83	2890	83	2640	83	2410	94	106
35	81	3960	83	3200	84	2990	85	2780	85	2590	96	107	35	81	3940	81	3050	81	2810	82	2620	83	2430	94	105
40	82	4100	84	3370	85	3150	86	2940	87	2730	96	107	40	79	3840	82	3160	83	2950	83	2740	84	2550	94	105
45	83	4330	86	3570	87	3330	87	3110	88	2890	96	107	45	81	4050	83	3330	84	3110	85	2900	86	2700	94	105
50	85	4590	87	3780	88	3530	89	3290	89	3060	96	107	50	82	4290	85	3530	85	3290	86	3070	87	2850	94	105
52	85	4700	88	3870	89	3610	89	3370	90	3130	96	107	52	83	4390	85	3610	86	3370	87	3140	87	2920	94	105

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS																	
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS										
	10 KTS	V1 DIST		20 KTS	30 KTS	10 KTS			V1 DIST	20 KTS		30 KTS													
	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT													
-25	90	3810	90	2960	90	2710	90	2470	90	2260	94	107	-25	90	3830	90	2980	90	2730	90	2500	90	2280	95	108
-20	89	3880	89	3010	89	2760	89	2520	89	2300	94	107	-20	90	3890	90	3030	90	2780	90	2550	90	2330	95	108
-15	89	3940	89	3060	89	2810	89	2570	89	2340	94	107	-15	90	3960	90	3080	90	2830	90	2590	90	2370	95	108
-10	89	4010	89	3120	89	2860	89	2620	89	2390	94	107	-10	90	4020	90	3140	90	2880	90	2640	90	2410	95	108
-5	89	4080	89	3170	89	2910	89	2660	89	2430	94	107	-5	90	4090	90	3190	90	2930	90	2690	90	2460	95	108
0	89	4150	89	3220	89	2960	89	2710	89	2480	94	107	0	89	4160	89	3240	89	2980	89	2730	89	2500	95	108
5	89	4210	89	3280	89	3010	89	2760	89	2520	94	107	5	89	4220	89	3300	89	3030	89	2780	89	2540	95	108
10	89	4280	89	3330	89	3060	89	2800	89	2560	94	107	10	89	4290	89	3350	89	3080	89	2820	89	2590	95	108
15	88	4300	88	3350	88	3070	88	2820	88	2580	93	106	15	89	4310	89	3360	89	3090	89	2840	89	2600	94	107
20	87	4250	87	3310	87	3040	87	2780	87	2550	93	106	20	88	4260	88	3330	88	3060	88	2800	88	2570	93	106
25	86	4190	86	3260	86	2990	86	2740	86	2510	93	105	25	86	4190	86	3270	86	3010	86	2760	86	2520	91	104
30	84	4050	84	3150	84	2890	84	2640	84	2420	93	105	30	84	4050	84	3160	84	2900	84	2660	84	2430	91	103
35	81	3920	81	3040	81	2790	81	2550	81	2330	92	104	35	82	3910	82	3050	82	2790	82	2560	82	2330	90	103
40	79	3790	79	2960	80	2760	81	2570	82	2390	92	103	40	79	3770	79	2930	79	2690	79	2460	79	2240	90	102
45	78	3790	81	3110	81	2900	82	2700	83	2510	92	103	45	77	3640	78	2910	79	2710	79	2520	80	2340	90	101
50	80	4000	82	3290	83	3070	84	2860	84	2650	92	103	50	77	3730	79	3060	80	2850	81	2650	82	2460	90	101
52	80	4090	83	3360	83	3140	84	2920	85	2710	92	103	52	78	3810	80	3130	81	2920	81	2710	82	2520	90	101

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																	
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S			VR V2 KIAS										
	10 KTS	V1 DIST		20 KTS	30 KTS	10 KTS			V1 DIST	20 KTS		30 KTS													
	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT													
-25	90	3850	90	3010	90	2760	90	2530	90	2320	95	109	-25	91	3890	91	3050	91	2800	91	2570	91	2360	96	110
-20	90	3920	90	3060	90	2810	90	2580	90	2360	95	109	-20	91	3950	91	3100	91	2850	91	2620	91	2400	96	110
-15	90	3980	90	3110	90	2860	90	2620	90	2400	95	109	-15	90	4020	90	3150	90	2900	90	2660	90	2440	96	110
-10	90	4050	90	3170	90	2910	90	2670	90	2450	95	109	-10	90	4080	90	3210	90	2950	90	2710	90	2490	96	110
-5	90	4110	90	3220	90	2960	90	2720	90	2490	95	109	-5	90	4150	90	3260	90	3000	90	2760	90	2530	96	110
0	90	4180	90	3270	90	3010	90	2760	90	2530	95	109	0	90	4210	90	3310	90	3050	90	2800	90	2570	96	110
5	90	4240	90	3330	90	3060	90	2810	90	2580	95	109	5	90	4270	90	3360	90	3100	90	2850	90	2620	96	110
10	90	4310	90	3380	90	3110	90	2850	90	2620	95	109	10	90	4340	90	3410	90	3150	90	2890	90	2660	96	110
15	89	4320	89	3390	89	3120	89	2870	89	2630	95	108	15	89	4350	89	3430	89	3160	89	2900	89	2670	95	109
20	88	4270	88	3350	88	3080	88	2830	88	2590	93	107	20	88	4290	88	3380	88	3110	88	2860	88	2630	94	108
25	86	4200	86	3290	86	3030	86	2780	86	2550	92	105	25	87	4220	87	3320	87	3060	87	2810	87	2580	92	106
30	84	4050	84	3170	84	2910	84	2670	84	2450	91	102	30	85	4060	85	3190	85	2940	85	2700	85	2470	91	103
35	82	3910	82	3050	82	2800	82	2570	82	2350	88	101	35	82	3910	82	3070	82	2820	82	2590	82	2370	87	100
40	79	3760	79	2940	79	2690	79	2460	79	2250	88	100	40	80	3760	80	2940	80	2700	80	2480	80	2260	86	99
45	77	3630	77	2820	77	2590	77	2360	77	2180	88	100	45	77	3620	77	2830	77	2590	77	2370	77	2160	86	98
50	75	3510	76	2850	77	2650	78	2470	79	2290	88	99	50	75	3490	75	27								

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS							
VENR = 160 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS		TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-25	88 4090	92 3350	93 3120	94 2910	95 2700	107 117		-25	88 4030	91 3240	92 3020	93 2810	94 2610	106 116	
-20	88 4160	92 3420	93 3190	94 2970	95 2760	107 117		-20	88 4110	90 3300	92 3080	93 2870	94 2660	106 116	
-15	88 4240	92 3480	93 3250	94 3030	95 2810	107 117		-15	88 4190	90 3360	91 3140	92 2930	93 2720	106 116	
-10	88 4310	92 3550	93 3310	94 3090	95 2870	107 117		-10	88 4270	90 3430	91 3200	92 2980	93 2770	106 116	
-5	88 4380	91 3610	93 3370	94 3140	95 2930	107 117		-5	88 4350	90 3490	91 3260	92 3040	93 2830	106 116	
0	88 4460	91 3670	92 3430	93 3200	94 2980	107 117		0	88 4440	90 3550	91 3320	92 3090	93 2880	106 116	
5	88 4530	91 3740	92 3500	93 3260	94 3040	107 117		5	88 4510	90 3610	91 3380	92 3150	93 2940	106 116	
10	87 4610	91 3810	92 3560	93 3330	94 3100	107 117		10	88 4590	90 3680	91 3440	92 3210	93 2990	106 116	
15	88 4790	92 3960	93 3710	94 3460	95 3230	107 117		15	87 4620	91 3820	92 3580	93 3340	94 3120	105 116	
20	89 5010	93 4150	94 3880	95 3620	96 3380	107 116		20	88 4840	92 4000	93 3740	94 3500	95 3260	105 115	
25	91 5270	94 4360	95 4080	96 3810	97 3550	106 116		25	89 5080	93 4200	94 3940	95 3680	96 3430	105 115	
30	92 5560	95 4600	96 4310	97 4020	98 3750	106 116		30	91 5370	94 4440	95 4150	96 3880	97 3620	105 115	
35	93 5890	97 4870	98 4560	98 4260	99 3970	106 116		35	92 5680	95 4690	96 4390	97 4100	98 3830	105 115	
40	95 6260	98 5170	99 4830	100 4520	100 4210	106 116		40	94 6020	97 4980	97 4660	98 4350	99 4060	105 115	
45	96 6660	99 5500	100 5140	101 4810	101 4480	106 116		45	95 6410	98 5290	99 4950	99 4630	100 4310	105 115	
50		100 5860	101 5480	102 5120	102 4770	106 116		50	96 6840	99 5640	100 5270	100 4930	101 4590	105 115	

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
VENR = 160 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS		TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-25	88 4010	88 3070	89 2860	90 2660	91 2470	104 114		-25	88 3990	88 3050	88 2780	88 2530	89 2330	102 113	
-20	88 4090	88 3120	89 2920	90 2710	91 2520	104 114		-20	88 4070	88 3110	88 2840	88 2580	89 2380	102 113	
-15	88 4160	88 3190	89 2970	90 2770	91 2570	104 114		-15	88 4140	88 3170	88 2890	88 2640	89 2430	102 113	
-10	88 4240	88 3240	89 3030	90 2820	91 2620	104 114		-10	88 4220	88 3230	88 2950	88 2690	89 2480	102 113	
-5	88 4320	88 3300	89 3080	90 2870	91 2670	104 114		-5	88 4300	88 3290	88 3010	88 2740	89 2530	102 113	
0	88 4410	88 3360	89 3140	90 2930	91 2720	104 114		0	88 4380	88 3360	88 3060	88 2790	89 2570	102 113	
5	88 4480	88 3420	89 3200	90 2980	91 2770	104 114		5	88 4450	88 3410	88 3120	88 2840	89 2620	102 113	
10	88 4560	88 3480	89 3250	90 3040	91 2830	104 114		10	88 4530	88 3470	88 3170	88 2900	89 2670	102 113	
15	86 4500	88 3600	90 3370	91 3150	91 2930	104 114		15	87 4470	87 3430	87 3190	88 2970	89 2770	102 112	
20	86 4560	90 3770	91 3530	92 3290	92 3070	104 114		20	85 4380	87 3550	88 3320	89 3100	90 2890	102 112	
25	87 4790	91 3960	92 3700	93 3460	94 3220	104 114		25	85 4500	89 3720	89 3480	90 3250	91 3030	102 112	
30	89 5050	92 4170	93 3910	94 3650	95 3400	104 114		30	87 4750	90 3920	91 3670	92 3430	92 3190	102 112	
35	90 5340	93 4410	94 4130	95 3850	96 3590	104 114		35	88 5010	91 4140	92 3870	93 3620	94 3370	102 112	
40	92 5660	95 4670	96 4370	96 4080	97 3810	104 114		40	90 5310	92 4380	93 4100	94 3830	95 3570	102 112	
45	93 6010	96 4960	97 4640	97 4340	98 4040	104 114		45	91 5640	94 4650	94 4350	95 4060	96 3790	102 112	
50	94 6400	97 5280	98 4940	98 4620	99 4300	104 114		50	92 5990	95 4950	96 4630	96 4320	97 4030	102 112	

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
VENR = 160 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS		TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	
			10 KTS	20 KTS	30 KTS						10 KTS	20 KTS	30 KTS		
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-25	89 3980	89 3050	89 2780	89 2540	89 2310	100 111		-25	89 3970	89 3050	89 2790	89 2540	89 2310	98 110	
-20	89 4050	89 3110	89 2840	89 2590	89 2350	100 111		-20	89 4040	89 3110	89 2840	89 2590	89 2360	98 110	
-15	88 4130	88 3170	88 2890	88 2640	88 2400	100 111		-15	89 4110	89 3170	89 2890	89 2640	89 2410	98 110	
-10	88 4200	88 3230	88 2950	88 2690	88 2450	100 111		-10	89 4190	89 3220	89 2950	89 2690	89 2450	98 110	
-5	88 4280	88 3290	88 3000	88 2740	88 2500	100 111		-5	89 4260	89 3290	89 3010	89 2750	89 2500	98 110	
0	88 4360	88 3350	88 3060	88 2800	88 2550	100 111		0	89 4340	89 3350	89 3060	89 2800	89 2550	98 110	
5	88 4430	88 3410	88 3120	88 2840	88 2590	100 111		5	89 4410	89 3400	89 3120	89 2850	89 2600	98 110	
10	88 4510	88 3460	88 3170	88 2890	88 2640	100 111		10	88 4490	88 3460	88 3170	88 2900	88 2640	98 110	
15	87 4440	87 3420	87 3130	87 2850	87 2610	100 111		15	87 4420	87 3410	87 3120	87 2850	87 2600	98 110	
20	85 4350	85 3350	86 3130	87 2920	88 2720	100 111		20	85 4320	85 3330	85 3050	85 2790	85 2560	98 109	
25	83 4240	86 3500	87 3270	88 3050	89 2840	100 110		25	83 4210	84 3290	85 3080	86 2870	86 2680	98 109	
30	84 4460	87 3680	88 3440	89 3220	90 2990	100 110		30	82 4190	85 3450	86 3230	87 3010	88 2810	98 109	
35	86 4700	89 3890	90 3630	91 3390	91 3160	100 110		35	84 4410	86 3640	87 3400	88 3180	89 2960	98 109	
40	87 4980	90 4110	91 3840	92 3590	93 3340	100 110		40	85 4660	88 3850	89 3600	89 3360	90 3130	98 109	
45	89 5280	91 4360	92 4080	93 3800	94 3540	100 110		45	87 4940	89 4080	90 3810	91 3560	91 3310	98 108	
50	90 5610	93 4630	93 4330	94 4040	95 3760	100 110		50	88 5240	90 4330	91 4040	92 3770	92 3510	98 108	

Figure S25-2 (Sheet 5 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS						
	10 KTS				10 KTS	20 KTS	30 KTS		10 KTS						10 KTS	20 KTS	30 KTS		10 KTS						10 KTS				10 KTS	20 KTS	30 KTS		10 KTS					10 KTS	20 KTS	30 KTS	
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST			V1 DIST		V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-25	89	3960	89	3060	89	2800	89	2550	89	2330	97	109	-25	89	3960	89	3070	89	2810	89	2570	89	2340	95	107	-25	89	3960	89	3070	89	2810	89	2570	89	2340	95	107			
-20	89	4030	89	3110	89	2850	89	2600	89	2370	97	109	-20	89	4030	89	3120	89	2860	89	2620	89	2390	95	107	-20	89	4030	89	3120	89	2860	89	2620	89	2390	95	107			
-15	89	4100	89	3170	89	2900	89	2650	89	2420	97	109	-15	89	4100	89	3180	89	2910	89	2660	89	2430	95	107	-15	89	4100	89	3180	89	2910	89	2660	89	2430	95	107			
-10	89	4180	89	3230	89	2960	89	2700	89	2460	97	109	-10	89	4180	89	3240	89	2970	89	2720	89	2480	95	107	-10	89	4180	89	3240	89	2970	89	2720	89	2480	95	107			
-5	89	4250	89	3290	89	3010	89	2750	89	2510	97	109	-5	89	4250	89	3300	89	3020	89	2770	89	2530	95	107	-5	89	4250	89	3300	89	3020	89	2770	89	2530	95	107			
0	89	4330	89	3350	89	3070	89	2810	89	2560	97	109	0	89	4330	89	3360	89	3080	89	2820	89	2580	95	107	0	89	4330	89	3360	89	3080	89	2820	89	2580	95	107			
5	89	4400	89	3410	89	3120	89	2860	89	2610	97	109	5	89	4400	89	3410	89	3130	89	2870	89	2620	95	107	5	89	4400	89	3410	89	3130	89	2870	89	2620	95	107			
10	89	4470	89	3460	89	3170	89	2900	89	2650	97	109	10	89	4470	89	3470	89	3180	89	2920	89	2670	95	107	10	89	4470	89	3470	89	3180	89	2920	89	2670	95	107			
15	87	4410	87	3410	87	3120	87	2860	87	2610	97	108	15	88	4400	88	3410	88	3130	88	2870	88	2620	95	107	15	88	4400	88	3410	88	3130	88	2870	88	2620	95	107			
20	85	4300	85	3330	85	3050	85	2790	85	2550	96	108	20	86	4290	86	3330	86	3050	86	2800	86	2550	95	107	20	86	4290	86	3330	86	3050	86	2800	86	2550	95	107			
25	83	4190	83	3240	83	2970	83	2710	84	2510	96	107	25	84	4170	84	3240	84	2970	84	2710	84	2480	94	106	25	84	4170	84	3240	84	2970	84	2710	84	2480	94	106			
30	81	4060	83	3240	83	3030	84	2830	85	2630	96	107	30	81	4040	81	3130	81	2870	82	2650	83	2470	94	106	30	81	4040	81	3130	81	2870	82	2650	83	2470	94	106			
35	81	4140	84	3410	85	3190	86	2970	86	2760	96	107	35	79	3920	81	3190	82	2980	83	2780	84	2580	94	105	35	79	3920	81	3190	82	2980	83	2780	84	2580	94	105			
40	83	4360	85	3600	86	3360	87	3140	88	2920	96	107	40	80	4080	83	3360	84	3140	84	2930	85	2720	94	105	40	80	4080	83	3360	84	3140	84	2930	85	2720	94	105			
45	84	4620	87	3810	88	3560	88	3320	89	3090	96	107	45	82	4310	84	3560	85	3320	86	3100	86	2880	94	105	45	82	4310	84	3560	85	3320	86	3100	86	2880	94	105			
50	86	4900	88	4040	89	3770	89	3520	90	3280	96	107	50	83	4570	86	3770	86	3520	87	3280	88	3050	94	105	50	83	4570	86	3770	86	3520	87	3280	88	3050	94	105			

WEIGHT = 12500 LBS								VENR = 160 KIAS				WEIGHT = 12000 LBS								VENR = 160 KIAS																		
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S				VR V2																			
	10 KTS		WIND		10 KTS	20 KTS	30 KTS	10 KTS				WIND		10 KTS	20 KTS	30 KTS																						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST																				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT								
-25	90	3970	90	3080	90	2830	90	2590	90	2360	95	108	-25	90	3990	90	3110	90	2850	90	2610	90	2390	95	109	-25	90	3990	90	3110	90	2850	90	2610	90	2390	95	109
-20	90	4040	90	3140	90	2880	90	2630	90	2410	95	108	-20	90	4050	90	3160	90	2900	90	2660	90	2430	95	109	-20	90	4050	90	3160	90	2900	90	2660	90	2430	95	109
-15	90	4110	90	3190	90	2930	90	2680	90	2450	95	108	-15	90	4120	90	3220	90	2950	90	2710	90	2480	95	109	-15	90	4120	90	3220	90	2950	90	2710	90	2480	95	109
-10	90	4180	90	3250	90	2980	90	2730	90	2500	95	108	-10	90	4190	90	3270	90	3010	90	2760	90	2530	95	109	-10	90	4190	90	3270	90	3010	90	2760	90	2530	95	109
-5	90	4260	90	3310	90	3040	90	2790	90	2550	95	108	-5	90	4270	90	3330	90	3060	90	2810	90	2570	95	109	-5	90	4270	90	3330	90	3060	90	2810	90	2570	95	109
0	89	4330	89	3370	89	3100	89	2840	89	2600	95	108	0	90	4340	90	3390	90	3120	90	2860	90	2620	95	109	0	90	4340	90	3390	90	3120	90	2860	90	2620	95	109
5	89	4400	89	3430	89	3150	89	2890	89	2640	95	108	5	90	4410	90	3450	90	3170	90	2910	90	2670	95	109	5	90	4410	90	3450	90	3170	90	2910	90	2670	95	109
10	89	4470	89	3480	89	3200	89	2930	89	2690	95	108	10	90	4480	90	3500	90	3220	90	2960	90	2710	95	109	10	90	4480	90	3500	90	3220	90	2960	90	2710	95	109
15	88	4390	88	3420	88	3140	88	2880	88	2640	93	106	15	88	4400	88	3440	88	3160	88	2900	88	2660	93	107	15	88	4400	88	3440	88	3160	88	2900	88	2660	93	107
20	86	4280	86	3330	86	3060	86	2810	86	2570	93	105	20	86	4280	86	3350	86	3070	86	2820	86	2580	91	104	20	86	4280	86	3350	86	3070	86	2820	86	2580	91	104
25	84	4160	84	3240	84	2970	84	2720	84	2490	93	105	25	84	4150	84	3240	84	2980	84	2730	84	2500	91	103	25	84	4150	84	3240	84	2980	84	2730	84	2500	91	103
30	82	4030	82	3130	82	2870	82	2630	82	2400	92	104	30	82	4020	82	3130	82	2870	82	2630	82	2410	90	103	30	82	4020	82	3130	82	2870	82	2630	82	2410	90	103
35	79	3900	79	3030	80	2790	80	2600	81	2420	92	104	35	80	3880	80	3020	80	2770	80	2540	80	2320	90	102	35	80	3880	80	3020	80	2770	80	2540	80	2320	90	102
40	77	3810	80	3140	81	2930	82	2730	82	2540	92	103	40	77	3760	77	2930	78	2740	79	2550	80	2370	90	101	40	77	3760	77	2930	78	2740	79	2550	80	2370	90	101
45	79	4030	82	3310	82	3030	83	2880	84	2680	92	103	45	76	3750	79	3080	80	2880	80	2680	81	2490	90	101	45	76	3750	79	3080	80	2880	80	2680	81	2490	90	101
50	81	4260	83	3510	84	3270	84	3050	85	2840	92	103	50	78	3960	80	3260	81	3040	82	2830	82	2630	90	101	50	78	3960	80	3260	81	3040	82	2830	82	2630	90	101

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7⁰
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND			ZERO			HEAD WINDS						TEMP DEG C	TAILWIND			ZERO			HEAD WINDS																			
	10 KTS			WIND			10 KTS		20 KTS		30 KTS			10 KTS			WIND			10 KTS		20 KTS		30 KTS															
	V1	DIST		V1	DIST		V1	DIST	V1	DIST	V1	DIST		V1	DIST		V1	DIST		V1	DIST	V1	DIST	V1	DIST														
	KIAS	FT		KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT													
-30	88	4150		92	3380		93	3160	94	2940	95	2730	107	117	-30	88	4130		90	3270		91	3050	92	2840	93	2640	106	116										
-25	88	4220		91	3450		93	3220	94	3000	95	2790	107	117	-25	88	4210		90	3340		91	3110	92	2900	93	2700	106	116										
-20	88	4310		91	3520		92	3290	94	3060	94	2850	107	117	-20	88	4290		90	3400		91	3180	92	2960	93	2750	106	116										
-15	88	4390		91	3590		92	3350	93	3130	94	2910	107	117	-15	88	4370		90	3470		91	3240	92	3020	93	2810	106	116										
-10	88	4480		91	3650		92	3420	93	3190	94	2970	107	117	-10	88	4460		90	3530		91	3300	92	3080	93	2870	106	116										
-5	88	4560		91	3720		92	3480	93	3250	94	3030	107	117	-5	88	4540		90	3600		91	3360	92	3140	93	2920	106	116										
0	88	4630		91	3800		92	3560	93	3320	94	3100	107	117	0	88	4610		90	3670		91	3430	92	3210	93	2990	106	116										
5	87	4710		91	3900		92	3650	93	3410	94	3180	107	117	5	87	4640		90	3770		91	3520	92	3290	93	3070	106	116										
10	88	4850		92	4020		93	3760	94	3520	95	3280	107	117	10	87	4690		90	3880		91	3630	92	3390	93	3160	105	116										
15	89	5090		93	4210		94	3950	95	3690	96	3440	107	116	15	88	4910		91	4070		93	3810	94	3560	94	3320	105	115										
20	90	5340		94	4430		95	4140	96	3870	97	3620	106	116	20	89	5160		93	4270		94	4000	95	3740	96	3490	105	115										
25	92	5640		95	4670		96	4370	97	4090	98	3810	106	116	25	90	5440		94	4500		95	4220	96	3940	97	3680	105	115										
30	93	5960		96	4930		97	4620	98	4320	99	4030	106	116	30	92	5750		95	4760		96	4450	97	4160	98	3880	105	115										
35	94	6320		97	5230		98	4890	99	4570	100	4270	106	116	35	93	6090		96	5030		97	4710	98	4410	99	4110	105	115										
40	95	6720		99	5550		99	5200	100	4860	101	4530	106	116	40	94	6460		97	5350		98	5000	99	4680	100	4360	105	115										
45	95	7330		100	5910		100	5530	101	5170	102	4820	106	116	45	95	6890		98	5690		99	5320	100	4970	101	4640	105	115										
48	95	7760		100	6150		101	5750	102	5370	103	5010	106	116	48	95	7200		99	5910		100	5530	101	5170	101	4820	105	115										

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S					
			10 KTS	20 KTS	30 KTS	VR V2 KIAS				10 KTS	20 KTS	30 KTS			
			V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST			
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT			
-30	89 4110	89 3130	89 2890	90 2690	91 2500	104 114	-30	89 4090	89 3120	89 2850	89 2600	89 2360	102 113		
-25	88 4180	88 3190	89 2950	90 2750	91 2550	104 114	-25	89 4160	89 3180	89 2910	89 2650	89 2410	102 113		
-20	88 4260	88 3250	89 3010	90 2800	91 2610	104 114	-20	89 4240	89 3250	89 2960	89 2700	89 2460	102 113		
-15	88 4350	88 3320	89 3070	90 2860	91 2660	104 114	-15	88 4320	88 3310	88 3020	88 2760	88 2520	102 113		
-10	88 4430	88 3380	89 3130	90 2920	91 2710	104 114	-10	88 4400	88 3370	88 3080	88 2810	88 2570	102 113		
-5	88 4510	88 3450	89 3180	90 2970	91 2770	104 114	-5	88 4480	88 3440	88 3140	88 2860	88 2620	102 113		
0	88 4580	88 3500	89 3250	90 3030	91 2820	104 114	0	88 4550	88 3480	88 3180	88 2910	88 2670	102 113		
5	87 4610	88 3560	89 3330	90 3110	91 2900	104 114	5	88 4580	88 3510	88 3210	88 2940	89 2740	102 113		
10	87 4620	88 3660	89 3420	90 3200	91 2980	104 114	10	87 4580	87 3510	87 3230	88 3020	89 2820	102 112		
15	86 4630	89 3830	90 3590	91 3350	92 3120	104 114	15	85 4480	87 3610	88 3370	89 3150	90 2940	102 112		
20	87 4850	90 4020	91 3760	92 3520	93 3280	104 114	20	85 4570	88 3780	89 3540	90 3310	91 3080	102 112		
25	88 5110	92 4230	93 3960	94 3700	94 3460	104 114	25	86 4810	89 3980	90 3720	91 3480	92 3240	102 112		
30	90 5400	93 4470	94 4180	95 3910	96 3650	104 114	30	89 5070	91 4200	92 3930	93 3670	93 3420	102 112		
35	91 5710	94 4730	95 4430	96 4140	97 3860	104 114	35	89 5360	92 4430	93 4150	94 3880	94 3620	102 112		
40	92 6060	95 5010	96 4690	97 4380	98 4090	104 114	40	90 5680	93 4700	94 4400	95 4110	95 3830	102 112		
45	94 6450	96 5330	97 4990	98 4660	99 4350	104 114	45	92 6030	94 4990	95 4670	96 4360	97 4070	102 112		
48	95 6700	97 5530	98 5180	99 4840	99 4520	104 114	48	93 6260	95 5180	96 4850	97 4530	97 4220	102 112		

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT					20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT			
-30	89 4070	89 3120	89 2850	89 2600	89 2360	100 112	-30	89 4060	89 3120	89 2860	89 2610	89 2370	98 110		
-25	89 4140	89 3180	89 2900	89 2650	89 2410	100 112	-25	89 4130	89 3180	89 2910	89 2660	89 2420	98 110		
-20	89 4220	89 3240	89 2960	89 2700	89 2460	100 112	-20	89 4210	89 3240	89 2970	89 2710	89 2470	98 110		
-15	89 4300	89 3300	89 3020	89 2760	89 2510	100 112	-15	89 4290	89 3300	89 3020	89 2760	89 2520	98 110		
-10	89 4380	89 3370	89 3080	89 2810	89 2560	100 112	-10	89 4370	89 3370	89 3080	89 2820	89 2570	98 110		
-5	89 4460	89 3430	89 3140	89 2860	89 2610	100 112	-5	89 4440	89 3430	89 3140	89 2870	89 2620	98 110		
0	88 4520	88 3480	88 3180	88 2900	88 2650	100 112	0	89 4500	89 3470	89 3180	89 2910	89 2650	98 110		
5	88 4550	88 3500	88 3200	88 2930	88 2670	100 111	5	88 4530	88 3500	88 3200	88 2930	88 2670	98 110		
10	87 4560	87 3500	87 3210	87 2930	87 2670	100 111	10	87 4530	87 3500	87 3200	87 2930	87 2670	98 110		
15	85 4450	85 3420	86 3180	87 2970	88 2770	100 111	15	85 4420	85 3410	85 3120	85 2860	85 2610	98 109		
20	83 4340	86 3550	87 3320	88 3100	89 2890	100 110	20	83 4310	84 3340	84 3130	85 2920	86 2720	98 109		
25	84 4510	87 3740	88 3500	89 3260	90 3040	100 110	25	82 4240	85 3500	86 3280	87 3060	87 2850	98 109		
30	85 4760	88 3940	89 3680	90 3440	91 3210	100 110	30	83 4460	86 3690	87 3450	88 3220	89 3000	98 109		
35	87 5020	90 4160	91 3890	91 3630	92 3390	100 110	35	85 4710	87 3890	88 3640	89 3400	90 3170	98 109		
40	88 5320	91 4400	92 4120	93 3850	93 3580	100 110	40	86 4980	89 4120	89 3850	90 3590	91 3350	98 108		
45	90 5640	92 4670	93 4370	94 4080	94 3800	100 110	45	87 5280	90 4360	91 4080	91 3810	92 3550	98 108		
48	90 5850	93 4840	94 4530	94 4230	95 3940	100 110	48	88 5470	91 4520	91 4230	92 3950	93 3680	98 108		

Figure S25-2 (Sheet 7 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	89 4050	89 3130	89 2860	89 2620	89 2380	97 109	-30	90 4050	90 3140	90 2880	90 2630	90 2400	95 108
-25	89 4130	89 3190	89 2920	89 2660	89 2430	97 109	-25	90 4120	90 3200	90 2930	90 2680	90 2450	95 108
-20	89 4200	89 3250	89 2970	89 2720	89 2480	97 109	-20	90 4200	90 3260	90 2980	90 2730	90 2490	95 108
-15	89 4280	89 3310	89 3030	89 2770	89 2530	97 109	-15	89 4280	89 3320	89 3040	89 2780	89 2540	95 108
-10	89 4360	89 3370	89 3090	89 2820	89 2580	97 109	-10	89 4350	89 3380	89 3100	89 2840	89 2590	95 108
-5	89 4430	89 3430	89 3140	89 2880	89 2630	97 109	-5	89 4430	89 3440	89 3150	89 2890	89 2640	95 108
0	89 4490	89 3470	89 3180	89 2920	89 2660	97 109	0	89 4480	89 3480	89 3190	89 2930	89 2680	95 108
5	88 4520	88 3500	88 3200	88 2930	88 2680	97 109	5	89 4510	89 3500	89 3210	89 2940	89 2690	95 107
10	87 4510	87 3500	87 3200	87 2930	87 2680	97 109	10	88 4500	88 3500	88 3210	88 2940	88 2690	95 107
15	86 4400	86 3410	86 3120	86 2860	86 2610	96 108	15	86 4380	86 3410	86 3120	86 2860	86 2620	95 107
20	84 4290	84 3320	84 3040	84 2780	84 2560	96 108	20	84 4270	84 3310	84 3040	84 2780	84 2540	94 106
25	81 4170	82 3290	83 3080	84 2870	85 2670	96 107	25	82 4140	82 3220	82 2950	82 2690	82 2510	94 106
30	81 4180	84 3450	84 3230	85 3010	86 2810	96 107	30	79 4020	81 3230	82 3020	83 2820	84 2620	94 105
35	82 4400	85 3640	86 3400	87 3180	87 2960	96 107	35	80 4120	82 3400	83 3180	84 2960	85 2760	94 105
40	84 4650	86 3850	87 3600	88 3360	89 3130	96 107	40	81 4350	84 3590	85 3350	85 3130	86 2910	94 105
45	85 4930	88 4070	88 3810	89 3550	90 3310	96 107	45	83 4600	85 3800	86 3550	87 3310	87 3080	94 105
48	86 5110	88 4220	89 3940	90 3680	90 3430	96 107	48	84 4760	86 3930	87 3670	87 3430	88 3190	94 105

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	90 4060	90 3160	90 2900	90 2650	90 2420	95 108	-30	90 4080	90 3180	90 2920	90 2680	90 2450	96 109
-25	90 4130	90 3210	90 2950	90 2700	90 2470	95 108	-25	90 4150	90 3240	90 2970	90 2730	90 2490	96 109
-20	90 4210	90 3270	90 3000	90 2750	90 2520	95 108	-20	90 4220	90 3290	90 3030	90 2780	90 2540	96 109
-15	90 4280	90 3330	90 3060	90 2800	90 2560	95 108	-15	90 4290	90 3350	90 3080	90 2830	90 2590	96 109
-10	90 4360	90 3390	90 3110	90 2860	90 2610	95 108	-10	90 4370	90 3410	90 3140	90 2880	90 2640	96 109
-5	90 4430	90 3450	90 3170	90 2910	90 2660	95 108	-5	90 4440	90 3470	90 3190	90 2930	90 2690	96 109
0	89 4480	89 3490	89 3210	89 2940	89 2700	95 108	0	90 4490	90 3510	90 3230	90 2970	90 2720	95 109
5	89 4510	89 3510	89 3230	89 2960	89 2710	94 107	5	89 4510	89 3530	89 3250	89 2980	89 2740	95 108
10	88 4500	88 3510	88 3220	88 2960	88 2710	93 106	10	88 4500	88 3520	88 3240	88 2980	88 2730	94 107
15	86 4380	86 3410	86 3130	86 2870	86 2630	93 105	15	86 4370	86 3420	86 3150	86 2890	86 2650	91 105
20	84 4260	84 3310	84 3040	84 2790	84 2550	93 105	20	84 4250	84 3320	84 3050	84 2800	84 2560	91 103
25	82 4130	82 3210	82 2950	82 2700	82 2460	92 104	25	82 4120	82 3210	82 2950	82 2700	82 2470	91 103
30	80 4000	80 3110	80 2850	80 2640	81 2460	92 104	30	80 3990	80 3110	80 2850	80 2610	80 2390	90 102
35	77 3880	80 3170	80 2970	81 2760	82 2570	92 103	35	78 3860	78 3010	78 2770	79 2580	79 2400	90 102
40	79 4050	81 3340	82 3120	83 2910	83 2710	92 103	40	76 3780	78 3110	79 2900	80 2710	81 2520	90 101
45	80 4280	83 3530	83 3300	84 3080	85 2860	92 103	45	77 3990	80 3280	81 3070	81 2860	82 2660	90 101
48	81 4430	83 3660	84 3420	85 3190	85 2960	92 103	48	78 4120	81 3400	81 3170	82 2960	83 2750	90 101

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	91 4100	91 3210	91 2950	91 2710	91 2480	96 110	-30	91 4140	91 3250	91 3000	91 2750	91 2530	97 112
-25	91 4170	91 3270	91 3000	91 2760	91 2530	96 110	-25	91 4210	91 3310	91 3050	91 2800	91 2570	97 111
-20	91 4240	91 3330	91 3060	91 2810	91 2580	96 110	-20	91 4280	91 3370	91 3100	91 2850	91 2620	97 111
-15	90 4320	90 3390	90 3120	90 2860	90 2630	96 110	-15	91 4350	91 3430	91 3160	91 2900	91 2670	97 111
-10	90 4390	90 3440	90 3170	90 2910	90 2670	96 110	-10	91 4420	91 3480	91 3210	91 2950	91 2720	97 111
-5	90 4460	90 3500	90 3230	90 2970	90 2720	96 110	-5	91 4500	91 3540	91 3270	91 3010	91 2760	97 111
0	90 4510	90 3540	90 3260	90 3000	90 2760	96 110	0	90 4550	90 3580	90 3300	90 3040	90 2800	97 111
5	89 4530	89 3560	89 3280	89 3010	89 2770	95 109	5	90 4560	90 3600	90 3320	90 3050	90 2810	96 110
10	89 4520	89 3550	89 3270	89 3000	89 2760	94 108	10	89 4540	89 3580	89 3300	89 3040	89 2800	95 109
15	87 4380	87 3440	87 3170	87 2910	87 2670	92 106	15	87 4400	87 3470	87 3200	87 2940	87 2700	93 107
20	85 4250	85 3330	85 3070	85 2820	85 2580	90 103	20	85 4260	85 3360	85 3090	85 2840	85 2610	90 104
25	82 4110	82 3220	82 2960	82 2720	82 2490	88 101	25	83 4120	83 3240	83 2980	83 2740	83 2510	88 101
30	80 3980	80 3110	80 2860	80 2620	80 2400	88 101	30	81 3970	81 3120	81 2870	81 2630	81 2410	86 99
35	78 3850	78 3000	78 2760	78 2520	78 2310	88 100	35	78 3840	78 3010	78 2760	78 2530	78 2320	86 99
40	76 3720	76 2900	76 2710	77 2520	78 2350	88 100	40	76 3710	76 2900	76 2660	76 2440	76 2220	86 98
45	75 3710	77 3050	78 2840	78 2650	79 2460	88 99	45	74 3590	74 2830	75 2640	75 2460	76 2280	86 97
48	76 3830	78 3150	79 2940	79 2740	80 2540	88 99	48	73 3550	75 2920	76 2720	76 2530	77 2350	86 97

Figure S25-2 (Sheet 8 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 160 KIAS									WEIGHT = 16000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S												
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	VR	V2		10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	VR	V2		10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	VR	V2									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT							
-30	88	4330	91	3490	92	3260	93	3040	94	2820	107	117	-30	88	4310	90	3370	91	3150	92	2930	93	2730	106	116										
-25	88	4410	91	3560	92	3330	93	3100	94	2890	107	117	-25	88	4390	90	3440	91	3210	92	3000	93	2790	106	116										
-20	88	4500	91	3630	92	3390	93	3160	94	2950	107	117	-20	88	4480	90	3510	91	3280	92	3060	93	2850	106	116										
-15	88	4600	91	3700	92	3460	93	3230	94	3010	107	117	-15	88	4570	89	3570	91	3340	92	3120	93	2900	106	116										
-10	88	4680	91	3770	92	3530	93	3290	94	3070	107	117	-10	88	4660	89	3640	90	3410	92	3180	93	2960	106	116										
-5	88	4770	91	3840	92	3590	93	3360	94	3130	107	117	-5	88	4750	89	3710	90	3470	91	3240	92	3020	106	116										
0	87	4780	91	3960	92	3710	93	3460	94	3230	107	117	0	87	4750	90	3820	91	3580	92	3350	93	3120	106	116										
5	88	4940	91	4090	93	3830	94	3580	95	3350	107	117	5	86	4770	90	3950	91	3700	92	3460	93	3230	105	116										
10	89	5150	92	4270	93	4000	94	3740	95	3500	107	116	10	87	4970	91	4120	92	3860	93	3610	94	3370	105	116										
15	90	5420	94	4500	95	4210	96	3940	97	3680	106	116	15	89	5230	92	4340	93	4070	94	3800	95	3550	105	115										
20	91	5720	95	4740	96	4440	97	4160	98	3880	106	116	20	90	5520	93	4570	95	4280	96	4010	97	3740	105	115										
25	92	6050	96	5010	97	4690	98	4390	99	4100	106	116	25	91	5820	95	4830	96	4520	97	4230	98	3950	105	115										
30	94	6400	97	5300	98	4970	99	4640	100	4340	106	116	30	93	6160	96	5110	97	4780	98	4470	99	4180	105	115										
35	94	6850	98	5620	99	5270	100	4920	101	4600	106	116	35	94	6530	97	5410	98	5070	99	4740	100	4420	105	115										
40	94	7470	99	5970	100	5590	101	5230	102	4880	106	116	40	95	6960	98	5740	99	5380	100	5030	100	4700	105	115										
45	94	8190	100	6370	101	5960	102	5570	102	5200	106	116	45	95	7610	99	6120	100	5730	101	5360	101	5000	105	115										
46	93	8360	100	6450	101	6040	102	5650	103	5270	106	116	46	95	7760	99	6200	100	5800	101	5430	101	5070	105	115										

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS		V1 DIST		10 KTS		20 KTS			30 KTS		10 KTS		V1 DIST		20 KTS			30 KTS		10 KTS		V1 DIST		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				
-30	89	4280	89	3270	89	2980	90	2780	91	2590	104	114	-30	89	4260	89	3260	89	2980	89	2710	89	2470	102	113						
-25	89	4370	89	3330	89	3050	90	2840	91	2640	104	114	-25	89	4340	89	3320	89	3040	89	2770	89	2520	102	113						
-20	89	4450	89	3400	89	3100	89	2900	90	2700	104	114	-20	89	4430	89	3390	89	3100	89	2830	89	2570	102	113						
-15	88	4540	88	3470	88	3170	89	2960	90	2750	104	114	-15	89	4520	89	3460	89	3160	89	2880	89	2630	102	113						
-10	88	4630	88	3530	88	3230	89	3010	90	2810	104	114	-10	89	4600	89	3520	89	3220	89	2940	89	2680	102	113						
-5	88	4710	88	3600	88	3290	89	3070	90	2860	104	114	-5	88	4680	88	3590	88	3280	88	2990	88	2730	102	113						
0	87	4720	87	3610	89	3380	90	3160	91	2950	104	114	0	88	4690	88	3590	88	3280	88	3000	88	2790	102	113						
5	86	4710	88	3730	89	3490	90	3260	91	3040	104	114	5	87	4670	87	3580	87	3300	88	3080	89	2870	102	113						
10	85	4690	89	3880	90	3640	91	3400	92	3170	104	114	10	85	4590	87	3660	88	3420	89	3200	90	2980	102	112						
15	87	4930	90	4080	91	3830	92	3580	93	3340	104	114	15	85	4640	88	3840	89	3600	90	3360	91	3140	102	112						
20	88	5190	91	4300	92	4030	93	3770	94	3520	104	114	20	86	4870	89	4040	90	3780	91	3540	92	3300	102	112						
25	89	5470	93	4540	94	4250	94	3970	95	3710	104	114	25	87	5140	90	4260	91	3990	92	3730	93	3480	102	112						
30	91	5780	94	4790	95	4490	96	4200	96	3920	104	114	30	89	5430	92	4500	93	4210	93	3940	94	3670	102	112						
35	92	6120	95	5070	96	4750	97	4440	97	4150	104	114	35	90	5740	93	4750	94	4450	94	4160	95	3880	102	112						
40	93	6500	96	5390	97	5040	98	4710	98	4400	104	114	40	91	6080	94	5040	95	4720	95	4410	96	4120	102	112						
45	94	6920	97	5720	98	5360	99	5010	99	4680	104	114	45	92	6470	95	5350	96	5010	97	4690	97	4370	102	112						
46	95	7010	97	5800	98	5430	99	5080	99	4740	104	114	46	93	6550	95	5420	96	5080	97	4750	97	4430	102	112						

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS														
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S															
	10 KTS				10 KTS		20 KTS			30 KTS		10 KTS				10 KTS			20 KTS		30 KTS		10 KTS				10 KTS		20 KTS		30 KTS							
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT								
-30	89	4240	89	3260	89	2980	89	2720	89	2470	100	112	-30	89	4230	89	3260	89	2980	89	2720	89	2480	98	110	-30	89	4230	89	3260	89	2480	98	110				
-25	89	4320	89	3320	89	3030	89	2770	89	2520	100	112	-25	89	4310	89	3320	89	3040	89	2780	89	2530	98	110	-25	89	4310	89	3320	89	2530	98	110				
-20	89	4410	89	3390	89	3100	89	2830	89	2580	100	112	-20	89	4390	89	3390	89	3100	89	2830	89	2580	98	110	-20	89	4390	89	3390	89	2580	98	110				
-15	89	4490	89	3450	89	3160	89	2890	89	2630	100	112	-15	89	4480	89	3450	89	3160	89	2890	89	2640	98	110	-15	89	4480	89	3450	89	2640	98	110				
-10	89	4570	89	3520	89	3220	89	2940	89	2680	100	112	-10	89	4560	89	3510	89	3220	89	2940	89	2690	98	110	-10	89	4560	89	3510	89	2690	98	110				
-5	89	4660	89	3580	89	3280	89	2990	89	2730	100	112	-5	89	4640	89	3580	89	3280	89	3000	89	2740	98	110	-5	89	4640	89	3580	89	3000	89	2740	98	110		
0	88	4660	88	3580	88	3280	88	3000	88	2730	100	111	0	88	4640	88	3580	88	3280	88	3000	88	2740	98	110	0	88	4640	88	3580	88	3000	88	2740	98	110		
5	87	4640	87	3570	87	3270	87	2990	87	2720	100	111	5	87	4620	87	3560	87	3260	87	2990	87	2730	98	110	5	87	4620	87	3560	87	2990	87	2730	98	110		
10	85	4560	85	3510	85	3230	86	3020	87	2820	100	111	10	86	4530	86	3500	86	3210	86	2930	86	2680	98	109	10	86	4530	86	3500	86	2680	98	109				
15	83	4440	86	3610	87	3380	88	3160	88	2940	100	110	15	83	4410	83	3410	84	3180	85	2970	86	2770	98	109	15	83	4410	83	3410	84	2970	86	2770	98	109		
20	84	4580	87	3790	88	3550	89	3320	90	3090	100	110	20	81	4300	85	3560	85	3330	86	3110	87	2900	98	109	20	81	4300	85	3560	85	3330	86	2900	98	109		
25	85	4820	88	3990	89	3740	90	3490	91	3260	100	110	25	83	4520	86	3740	87	3500	88	3270	88	3050	98	109	25	83	4520	86	3740	87	3500	88	3050	98	109		
30	86	5090	89	4210	90	3940	91	3690	92	3440	100	110	30	84	4760	87	3940	88	3690	89	3450	89	3220	98	109	30	84	4760	87	3940	88	3690	89	3220	98	109		
35	88	5370	91	4450	91	4170	92	3890	93	3630	100	110	35	86	5030	88	4160	89	3900	90	3640	91	3390	98	108	35	86	5030	88	4160	89	3900	90	3390	98	108		
40	89	5690	92	4710	93	4410	93	4120	94	3850	100	110	40	87	5320	90	4400	90	4120	91	3850	92	3590	98	108	40	87	5320	90	4400	90	4120	91	3850	92	3590	98	108
45	90	6040	93	5000	94	4680	94	4380	95	4080	100	110	45	88	5640	91	4670	91	4370	92	4080	93	3810	98	108	45	88	5640	91	4670	91	4370	92	4080	93	3810	98	108
46	91	6120	93	5070	94	4740	95	4430	95	4130	100	110	46	89	5710	91	4730	92	4420	92	4130	93	3860	98	108	46	89	5710	91	4730	92	4420	92	4130	93	3860	98	108

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS				WEIGHT = 13000 LBS								VENR = 160 KIAS					
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2						
	10 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	V1 DIST KIAS FT			10 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	V1 DIST KIAS FT								
-30	90	4230	90	3260	90	2990	90	2730	90	2490	97	109	-30	90	4220	90	3280	90	3000	90	2750	90	2510	95	108
-25	90	4300	90	3320	90	3040	90	2780	90	2540	97	109	-25	90	4300	90	3330	90	3060	90	2800	90	2560	95	108
-20	89	4380	89	3390	89	3110	89	2840	89	2600	97	109	-20	90	4380	90	3400	90	3120	90	2860	90	2610	95	108
-15	89	4470	89	3460	89	3170	89	2900	89	2650	97	109	-15	90	4460	90	3460	90	3180	90	2910	90	2660	95	108
-10	89	4540	89	3520	89	3220	89	2950	89	2700	97	109	-10	90	4540	90	3520	90	3230	90	2960	90	2710	95	108
-5	89	4620	89	3580	89	3280	89	3000	89	2750	97	109	-5	89	4610	89	3580	89	3290	89	3020	89	2760	95	108
0	88	4620	88	3580	88	3280	88	3000	88	2750	97	109	0	89	4610	89	3580	89	3290	89	3010	89	2760	95	107
5	87	4600	87	3560	87	3260	87	2990	87	2730	97	109	5	88	4590	88	3560	88	3270	88	3000	88	2740	95	107
10	86	4510	86	3500	86	3200	86	2930	86	2680	96	108	10	86	4500	86	3490	86	3210	86	2940	86	2690	95	107
15	84	4390	84	3400	84	3110	84	2850	84	2600	96	108	15	84	4370	84	3390	84	3110	84	2850	84	2600	95	106
20	82	4270	82	3340	83	3130	84	2920	85	2720	96	107	20	82	4240	82	3290	82	3020	82	2760	82	2550	94	106
25	80	4230	83	3500	84	3280	85	3060	86	2850	96	107	25	80	4120	81	3280	82	3070	82	2870	83	2670	94	105
30	82	4460	85	3690	85	3450	86	3220	87	3000	96	107	30	79	4170	82	3440	83	3220	84	3010	84	2800	94	105
35	83	4700	86	3890	87	3640	87	3400	88	3170	96	107	35	81	4390	83	3630	84	3390	85	3170	86	2950	94	105
40	85	4970	87	4110	88	3850	89	3590	89	3350	96	107	40	82	4630	85	3830	85	3580	86	3350	87	3120	94	105
45	86	5260	88	4360	89	4080	90	3810	90	3550	96	107	45	84	4910	86	4060	87	3790	87	3540	88	3300	94	105
46	86	5330	89	4410	89	4120	90	3850	91	3590	96	107	46	84	4960	86	4100	87	3840	88	3580	88	3340	94	105

WEIGHT = 12500 LBS								VENR = 160 KIAS				WEIGHT = 12000 LBS								VENR = 160 KIAS					
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR V2						
	10 KTS		V1 DIST		20 KTS		30 KTS				10 KTS		V1 DIST		20 KTS		30 KTS								
	V1 DIST	VR V2	V1 DIST	VR V2	V1 DIST	VR V2	V1 DIST	VR V2			V1 DIST	VR V2	V1 DIST	VR V2	V1 DIST	VR V2									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-30	90	4230	90	3290	90	3020	90	2770	90	2530	96	109	-30	91	4250	91	3320	91	3050	91	2800	91	2560	96	110
-25	90	4300	90	3350	90	3080	90	2820	90	2580	96	109	-25	90	4320	90	3370	90	3100	90	2850	90	2610	96	110
-20	90	4380	90	3410	90	3140	90	2880	90	2630	96	109	-20	90	4400	90	3440	90	3160	90	2900	90	2660	96	110
-15	90	4470	90	3480	90	3200	90	2930	90	2680	96	109	-15	90	4480	90	3500	90	3220	90	2960	90	2710	96	110
-10	90	4540	90	3540	90	3250	90	2980	90	2730	95	109	-10	90	4550	90	3560	90	3280	90	3010	90	2760	96	110
-5	90	4620	90	3600	90	3310	90	3030	90	2780	95	109	-5	90	4630	90	3620	90	3330	90	3060	90	2810	96	110
0	89	4610	89	3590	89	3300	89	3030	89	2780	94	108	0	89	4620	89	3610	89	3320	89	3050	89	2800	95	109
5	88	4580	88	3570	88	3280	88	3010	88	2760	93	106	5	88	4580	88	3590	88	3300	88	3030	88	2780	94	107
10	86	4490	86	3500	86	3210	86	2950	86	2700	93	105	10	87	4490	87	3510	87	3230	87	2960	87	2720	92	105
15	84	4350	84	3390	84	3120	84	2860	84	2610	93	105	15	84	4350	84	3400	84	3120	84	2870	84	2630	91	103
20	82	4220	82	3290	82	3020	82	2770	82	2530	92	104	20	82	4210	82	3290	82	3020	82	2770	82	2540	91	103
25	80	4100	80	3190	80	2930	80	2680	81	2500	92	104	25	80	4080	80	3190	80	2930	80	2680	80	2450	90	102
30	78	3980	79	3220	80	3010	81	2810	82	2610	92	103	30	78	3960	78	3090	78	2830	78	2620	79	2440	90	102
35	78	4090	81	3380	82	3160	82	2950	83	2740	92	103	35	76	3850	78	3150	79	2940	79	2750	80	2550	90	101
40	80	4320	82	3570	83	3330	84	3110	84	2900	92	103	40	77	4020	79	3320	80	3100	81	2890	82	2690	90	101
45	81	4570	83	3770	84	3530	85	3290	85	3070	92	103	45	78	4250	81	3500	81	3270	82	3050	83	2840	90	101
46	81	4620	84	3820	84	3570	85	3330	86	3100	92	103	46	79	4290	81	3540	82	3310	82	3090	83	2870	90	101

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-30	91 4270	91 3350	91 3080	91 2830	91 2600	97 111	-30	91 4310	91 3390	91 3120	91 2870	91 2640	98 112	-25	91 4340	91 3410	91 3130	91 2880	91 2640	97 111	-25	91 4380	91 3450	91 3180	91 2920	91 2690	98 112				
-20	91 4420	91 3470	91 3190	91 2940	91 2690	97 111	-20	91 4460	91 3510	91 3240	91 2980	91 2740	98 112	-15	91 4500	91 3530	91 3250	91 2990	91 2750	97 111	-15	91 4530	91 3570	91 3300	91 3030	91 2790	98 112				
-10	91 4570	91 3590	91 3310	91 3040	91 2790	97 111	-10	91 4610	91 3630	91 3350	91 3090	91 2840	98 112	-5	90 4650	90 3650	90 3360	90 3090	90 2840	97 111	-5	91 4680	91 3690	91 3400	91 3140	91 2890	98 112				
0	90 4630	90 3640	90 3350	90 3080	90 2830	96 110	0	90 4660	90 3680	90 3390	90 3120	90 2870	97 111	5	89 4600	89 3610	89 3330	89 3060	89 2810	95 108	5	89 4620	89 3640	89 3360	89 3100	89 2850	95 109				
10	87 4490	87 3530	87 3250	87 2990	87 2740	92 106	10	87 4510	87 3560	87 3280	87 3020	87 2770	93 107	15	85 4350	85 3410	85 3140	85 2880	85 2650	90 103	15	85 4360	85 3430	85 3160	85 2910	85 2670	90 104				
20	83 4210	83 3300	83 3030	83 2790	83 2550	88 101	20	83 4210	83 3310	83 3050	83 2810	83 2570	88 101	25	80 4070	80 3190	80 2930	80 2690	80 2460	88 101	25	81 4070	81 3200	81 2940	81 2700	81 2480	86 99				
30	78 3950	78 3090	78 2830	78 2600	78 2370	88 100	30	79 3940	79 3090	79 2840	79 2610	79 2390	86 99	35	76 3830	76 2990	76 2740	77 2560	78 2380	88 100	35	76 3820	76 2990	76 2740	76 2510	76 2300	86 98				
40	74 3730	76 3080	77 2880	78 2680	79 2490	88 99	40	74 3700	74 2890	74 2670	75 2490	76 2310	86 98	45	76 3940	78 3250	79 3030	79 2830	80 2630	88 99	45	73 3650	75 3000	76 2800	76 2610	77 2430	86 97				
46	76 3980	78 3280	79 3070	80 2860	80 2660	88 99	46	73 3690	75 3030	76 2830	77 2640	77 2450	86 97																		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS												WEIGHT = 16000 LBS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT	ZERO WIND V1 DIST KI/AS FT	H E A D W I N D S						VR V2 KI/AS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT	ZERO WIND V1 DIST KI/AS FT	H E A D W I N D S						VR V2 KI/AS				
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS						
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					
			KI/AS	FT	KI/AS	FT	KI/AS	FT					KI/AS	FT	KI/AS	FT	KI/AS	FT		KI/AS	FT		
-35	89 4460	91 3510	92 3280	93 3060	94 2840	107 117			-35	89 4440	89 3400	90 3170	91 2960	92 2750	106 116								
-30	89 4550	90 3590	92 3350	93 3130	94 2910	107 117			-30	89 4530	89 3470	90 3240	91 3030	92 2810	106 116								
-25	89 4630	90 3660	92 3420	93 3190	94 2980	107 117			-25	89 4610	89 3540	90 3310	91 3090	92 2880	106 116								
-20	89 4720	90 3740	92 3500	93 3270	94 3040	107 117			-20	89 4700	89 3620	90 3380	91 3160	92 2940	106 116								
-15	88 4780	90 3830	92 3580	93 3350	94 3120	107 117			-15	88 4760	89 3700	90 3460	91 3230	92 3020	106 116								
-10	88 4820	91 3940	92 3690	93 3450	94 3220	107 117			-10	88 4790	89 3800	91 3560	92 3330	93 3100	106 116								
-5	87 4890	91 4060	92 3800	93 3550	94 3320	107 117			-5	87 4810	90 3920	91 3670	92 3430	93 3200	106 116								
0	88 5070	92 4210	93 3940	94 3690	95 3440	107 117			0	87 4890	90 4060	92 3800	93 3560	94 3320	105 116								
5	89 5250	92 4360	93 4090	94 3830	95 3570	107 116			5	87 5070	91 4210	92 3940	93 3690	94 3450	105 116								
10	90 5520	93 4590	94 4300	95 4020	96 3760	106 116			10	89 5330	92 4420	93 4140	94 3880	95 3620	105 115								
15	91 5820	94 4830	95 4520	96 4230	97 3960	106 116			15	90 5610	93 4650	94 4360	95 4080	96 3810	105 115								
20	92 6140	96 5090	97 4770	97 4470	98 4170	106 116			20	91 5910	94 4910	95 4600	96 4300	97 4020	105 115								
25	93 6490	97 5380	98 5040	98 4720	99 4410	106 116			25	92 6250	95 5180	96 4860	97 4540	98 4250	105 115								
30	93 7000	98 5700	99 5340	99 5000	100 4670	106 116			30	93 6610	97 5490	97 5140	98 4810	99 4490	105 115								
35	93 7520	99 6050	100 5670	100 5300	101 4960	106 116			35	94 7100	98 5820	98 5450	99 5100	100 4770	105 115								
40	92 8340	100 6440	101 6030	101 5640	102 5270	106 116			40	93 7760	99 6190	99 5790	100 5420	101 5060	105 115								
42	92 8660	100 6610	101 6190	102 5790	102 5410	106 116			42	93 8370	99 6510	100 6100	101 5710	102 5330	105 115								
44	92 9000	101 6780	101 6350	102 5940	103 5550	106 116																	

WEIGHT = 15500 LBS										VENR = 160 KI/AS										WEIGHT = 15000 LBS										VENR = 160 KI/AS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST							
	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT							
-35	89	4420	89	3370	89	3080	89	2800	90	2610	104	114	-35	90	4390	90	3360	90	3070	90	2800	90	2550	102	113	-35	89	4390	89	3360	89	3070	89	2800	89	2550	102	113	
-30	89	4500	89	3430	89	3140	89	2870	90	2670	104	114	-30	89	4470	89	3430	89	3130	89	2860	89	2600	102	113	-30	89	4470	89	3430	89	3130	89	2860	89	2600	102	113	
-25	89	4580	89	3500	89	3190	89	2930	90	2730	104	114	-25	89	4560	89	3490	89	3190	89	2910	89	2650	102	113	-25	89	4560	89	3490	89	3190	89	2910	89	2650	102	113	
-20	89	4670	89	3560	89	3250	89	2990	90	2790	104	114	-20	89	4640	89	3550	89	3250	89	2970	89	2700	102	113	-20	89	4640	89	3550	89	3250	89	2970	89	2700	102	113	
-15	88	4730	88	3610	88	3300	89	3060	90	2860	104	114	-15	89	4700	89	3600	89	3290	89	3000	89	2740	102	113	-15	89	4700	89	3600	89	3290	89	3000	89	2740	102	113	
-10	88	4750	88	3630	88	3370	89	3150	90	2930	104	114	-10	88	4720	88	3620	88	3310	88	3020	88	2770	102	113	-10	88	4720	88	3620	88	3310	88	3020	88	2770	102	113	
-5	87	4770	88	3700	89	3460	90	3230	91	3020	104	114	-5	87	4740	87	3630	87	3320	88	3060	89	2850	102	113	-5	87	4740	87	3630	87	3320	88	3060	89	2850	102	113	
0	86	4740	88	3820	89	3580	90	3350	91	3130	104	114	0	86	4710	86	3610	87	3380	88	3160	89	2950	102	112	0	86	4710	86	3610	87	3380	88	3160	89	2950	102	112	
5	85	4780	89	3960	90	3710	91	3470	92	3240	104	114	5	85	4670	87	3730	88	3490	89	3270	90	3050	102	112	5	85	4670	87	3730	88	3490	89	3270	90	3050	102	112	
10	87	5010	90	4160	91	3900	92	3650	93	3410	104	114	10	84	4720	88	3910	89	3670	90	3430	91	3200	102	112	10	84	4720	88	3910	89	3670	90	3430	91	3200	102	112	
15	88	5270	91	4380	92	4100	93	3840	94	3580	104	114	15	86	4950	89	4110	90	3850	91	3600	92	3360	102	112	15	86	4950	89	4110	90	3850	91	3600	92	3360	102	112	
20	89	5550	92	4610	93	4320	94	4040	95	3770	104	114	20	87	5210	90	4330	91	4050	92	3790	93	3540	102	112	20	87	5210	90	4330	91	4050	92	3790	93	3540	102	112	
25	90	5860	93	4860	94	4560	95	4260	96	3980	104	114	25	88	5500	91	4560	92	4270	93	4000	94	3730	102	112	25	88	5500	91	4560	92	4270	93	4000	94	3730	102	112	
30	91	6200	95	5140	95	4820	96	4510	97	4210	104	114	30	89	5810	92	4820	93	4510	94	4220	95	3940	102	112	30	89	5810	92	4820	93	4510	94	4220	95	3940	102	112	
35	93	6570	96	5450	96	5110	97	4780	98	4460	104	114	35	91	6150	94	5100	94	4780	95	4470	96	4170	102	112	35	91	6150	94	5100	94	4780	95	4470	96	4170	102	112	
40	94	6990	97	5790	97	5420	98	5070	99	4740	104	114	40	92	6530	95	5410	95	5070	96	4740	97	4430	102	112	40	92	6530	95	5410	95	5070	96	4740	97	4430	102	112	
44	95	7360	98	6090	98	5700	99	5330	100	4980	104	114	44	93	6860	96	5690	96	5330	97	4990	98	4650	102	112	44	93	6860	96	5690	96	5330	97	4990	98	4650	102	112	

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS														
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S											
					10 KTS		20 KTS		30 KTS							VR	V2	10 KTS		20 KTS							30 KTS		VR	V2								
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								V1 DIST	V1 DIST	V1 DIST	V1 DIST						V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT		
-35	90	4380	90	3360	90	3070	90	2800	90	2560	100	112	-35	90	4360	90	3360	90	3080	90	2810	90	2560	98	111	-35	90	4360	90	3360	90	3080	90	2810	90	2560	98	111
-30	90	4460	90	3420	90	3130	90	2860	90	2610	100	112	-30	90	4440	90	3420	90	3130	90	2860	90	2610	98	111	-30	90	4440	90	3420	90	3130	90	2860	90	2610	98	111
-25	89	4540	89	3490	89	3190	89	2910	89	2660	100	112	-25	90	4520	90	3480	90	3190	90	2920	90	2660	98	111	-25	90	4520	90	3480	90	3190	90	2920	90	2660	98	111
-20	89	4620	89	3550	89	3250	89	2970	89	2710	100	112	-20	90	4600	90	3550	90	3250	90	2970	90	2710	98	110	-20	90	4600	90	3550	90	3250	90	2970	90	2710	98	110
-15	89	4670	89	3590	89	3290	89	3000	89	2740	100	112	-15	89	4650	89	3590	89	3290	89	3010	89	2750	98	110	-15	89	4650	89	3590	89	3290	89	3010	89	2750	98	110
-10	88	4690	88	3610	88	3300	88	3020	88	2760	100	112	-10	88	4670	88	3610	88	3300	88	3020	88	2760	98	110	-10	88	4670	88	3610	88	3300	88	3020	88	2760	98	110
-5	87	4710	87	3620	87	3310	87	3030	87	2760	100	111	-5	88	4680	88	3610	88	3310	88	3030	88	2770	98	110	-5	88	4680	88	3610	88	3310	88	3030	88	2770	98	110
0	86	4670	86	3600	86	3290	86	3010	87	2780	100	111	0	87	4650	87	3590	87	3290	87	3010	87	2750	98	110	0	87	4650	87	3590	87	3290	87	3010	87	2750	98	110
5	85	4640	85	3570	85	3300	86	3080	87	2880	100	111	5	85	4610	85	3560	85	3260	85	2980	85	2730	98	109	5	85	4610	85	3560	85	3260	85	2980	85	2730	98	109
10	83	4530	85	3670	86	3440	87	3220	88	3000	100	110	10	83	4500	83	3480	84	3240	85	3030	86	2830	98	109	10	83	4500	83	3480	84	3240	85	3030	86	2830	98	109
15	83	4650	87	3860	88	3610	89	3380	89	3150	100	110	15	81	4390	84	3620	85	3390	86	3160	87	2950	98	109	15	81	4390	84	3620	85	3390	86	3160	87	2950	98	109
20	85	4890	88	4060	89	3800	90	3550	90	3320	100	110	20	83	4580	86	3800	86	3560	87	3330	88	3100	98	109	20	83	4580	86	3800	86	3560	87	3330	88	3100	98	109
25	86	5150	89	4270	90	4000	91	3740	92	3490	100	110	25	84	4820	87	4000	88	3750	88	3500	89	3270	98	109	25	84	4820	87	4000	88	3750	88	3500	89	3270	98	109
30	87	5440	90	4510	91	4220	92	3950	93	3690	100	110	30	85	5090	88	4220	89	3950	90	3690	90	3450	98	108	30	85	5090	88	4220	89	3950	90	3690	90	3450	98	108
35	89	5750	91	4770	92	4470	93	4180	94	3900	100	110	35	86	5370	89	4460	90	4170	91	3900	91	3640	98	108	35	86	5370	89	4460	90	4170	91	3900	91	3640	98	108
40	90	6100	93	5050	93	4740	94	4430	95	4140	100	110	40	88	5690	90	4720	91	4420	92	4130	92	3860	98	108	40	88	5690	90	4720	91	4420	92	4130	92	3860	98	108
44	91	6400	93	5310	94	4970	95	4650	95	4340	100	110	44	89	5970	91	4950	92	4640	93	4330	93	4050	98	108	44	89	5970	91	4950	92	4640	93	4330	93	4050	98	108

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS							
		ZERO		HEADWINDS						ZERO		HEADWINDS			
TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2	TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2
DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS	C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS
-35	90	4360	90	3370	90	3080	97 109	-35	91	4350	91	3380	91	3100	96 109
-30	90	4430	90	3430	90	3140	97 109	-30	90	4430	90	3440	90	3150	96 109
-25	90	4510	90	3490	90	3200	97 109	-25	90	4510	90	3500	90	3210	96 109
-20	90	4590	90	3550	90	3250	97 109	-20	90	4580	90	3560	90	3270	95 108
-15	89	4640	89	3590	89	3290	97 109	-15	90	4630	90	3600	90	3300	95 108
-10	89	4660	89	3610	89	3310	97 109	-10	89	4650	89	3610	89	3320	95 108
-5	88	4660	88	3610	88	3310	97 109	-5	88	4650	88	3620	88	3320	95 107
0	87	4630	87	3580	87	3290	97 108	0	87	4610	87	3580	87	3290	95 107
5	86	4590	86	3550	86	3260	96 108	5	86	4570	86	3550	86	3260	95 107
10	84	4470	84	3470	84	3180	96 108	10	84	4450	84	3460	84	3170	95 106
15	82	4360	82	3400	83	3180	96 107	15	82	4330	82	3370	82	3090	94 106
20	80	4290	83	3360	84	3330	96 107	20	80	4220	81	3330	81	3120	94 105
25	81	4510	84	3740	85	3500	96 107	25	79	4220	82	3490	83	3270	94 105
30	83	4750	86	3940	86	3690	96 107	30	80	4440	83	3680	84	3440	94 105
35	84	5020	87	4160	88	3890	96 107	35	82	4680	84	3880	85	3630	94 105
40	86	5310	88	4400	89	4120	96 107	40	83	4950	86	4100	87	3580	94 105
44	87	5570	89	4610	90	4320	96 107	44	84	5180	87	4290	87	4020	94 105

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS							
		ZERO		HEADWINDS						ZERO		HEADWINDS			
TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2	TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2
DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS	C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS
-35	91	4360	91	3400	91	3120	96 110	-35	91	4380	91	3420	91	3150	97 111
-30	91	4440	91	3460	91	3170	96 110	-30	91	4450	91	3480	91	3200	97 111
-25	91	4510	91	3510	91	3230	96 110	-25	91	4520	91	3540	91	3250	97 111
-20	90	4580	90	3570	90	3280	96 109	-20	91	4600	91	3600	91	3310	97 110
-15	90	4630	90	3610	90	3320	96 109	-15	90	4640	90	3630	90	3340	96 110
-10	89	4650	89	3620	89	3330	95 108	-10	90	4650	90	3640	90	3350	96 109
-5	88	4650	88	3620	88	3330	94 107	-5	89	4650	89	3640	89	3350	95 108
0	87	4600	87	3590	87	3300	93 106	0	88	4600	88	3600	88	3320	93 106
5	86	4560	86	3560	86	3270	93 105	5	86	4560	86	3570	86	3300	92 105
10	84	4440	84	3460	84	3180	93 105	10	84	4430	84	3460	84	3190	91 103
15	82	4310	82	3360	82	3090	92 104	15	82	4300	82	3360	82	3090	91 103
20	80	4200	80	3270	80	3000	92 104	20	80	4180	80	3270	80	3000	90 102
25	78	4080	79	3270	80	3050	92 103	25	78	4060	78	3170	78	2910	90 102
30	78	4140	80	3420	81	3200	92 103	30	76	3950	78	3190	79	2990	90 101
35	79	4360	82	3610	82	3380	92 103	35	77	4060	79	3350	80	3140	91 101
40	81	4610	83	3810	84	3570	92 103	40	78	4280	80	3540	81	3310	90 101
44	82	4820	84	3990	85	3730	92 103	44	79	4480	81	3700	82	3460	90 101

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS							
		ZERO		HEADWINDS						ZERO		HEADWINDS			
TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2	TEMP	TAILWIND			10 KTS	20 KTS	30 KTS	VR V2
DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		DEG	10 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS	C	KIAS	FT	FT	KIAS	FT	KIAS	KIAS
-35	92	4400	92	3460	92	3180	98 112	-35	92	4440	92	3500	92	3230	99 113
-30	91	4480	91	3510	91	3230	98 112	-30	92	4510	92	3560	92	3280	98 113
-25	91	4550	91	3570	91	3290	98 112	-25	92	4580	92	3610	92	3330	98 113
-20	91	4620	91	3630	91	3340	97 111	-20	91	4650	91	3670	91	3390	98 113
-15	91	4660	91	3660	91	3380	97 111	-15	91	4700	91	3710	91	3420	98 112
-10	90	4670	90	3670	90	3380	96 110	-10	90	4700	90	3710	90	3420	97 111
-5	89	4670	89	3670	89	3380	95 109	-5	89	4690	89	3700	89	3420	96 110
0	88	4620	88	3630	88	3340	94 108	0	88	4640	88	3660	88	3310	95 109
5	87	4560	87	3580	87	3300	92 106	5	87	4580	87	3610	87	3300	93 107
10	85	4430	85	3480	85	3200	90 103	10	85	4440	85	3500	85	3220	91 104
15	83	4300	83	3370	83	3100	88 101	15	83	4300	83	3390	83	3120	88 101
20	81	4170	81	3270	81	3010	88 101	20	81	4170	81	3280	81	3020	86 99
25	79	4050	79	3170	79	2910	88 100	25	79	4040	79	3170	79	2920	86 99
30	76	3930	76	3070	76	2820	88 100	30	77	3920	77	3070	77	2820	86 98
35	74	3820	76	3120	77	2910	88 99	35	75	3800	75	2970	75	2520	86 98
40	75	3970	78	3280	78	3060	88 99	40	72	3680	75	3040	75	2840	86 97
44	76	4150	79	3430	79	3200	88 99	44	73	3840	76	3160	76	2960	86 97

Figure S25-2 (Sheet 12 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	89	4690	90	3610	91	3380	92	3150	93	2930	107	117	-35	90	4670	90	3560	90	3270	91	3050	92	2840	106	116		
-30	89	4780	90	3690	91	3450	92	3220	93	3000	107	117	-30	89	4760	89	3620	90	3340	91	3120	92	2910	106	116		
-25	89	4870	90	3770	91	3530	92	3300	93	3080	107	117	-25	89	4840	89	3690	90	3420	91	3190	92	2980	106	116		
-20	89	4950	90	3860	91	3610	92	3380	93	3150	107	117	-20	89	4920	89	3750	90	3490	91	3270	92	3050	106	116		
-15	88	4940	90	3990	92	3740	93	3500	94	3270	107	117	-15	88	4910	89	3860	90	3610	91	3380	92	3150	106	116		
-10	87	4990	91	4150	92	3880	93	3630	94	3390	107	117	-10	87	4880	90	4000	91	3750	92	3510	93	3280	106	116		
-5	88	5190	92	4310	93	4040	94	3780	95	3530	107	117	-5	87	5010	90	4160	92	3900	93	3650	94	3410	105	116		
0	89	5400	92	4480	94	4200	95	3930	96	3680	107	116	0	88	5210	91	4330	92	4060	93	3800	94	3550	105	115		
5	90	5640	93	4680	94	4390	95	4110	96	3840	106	116	5	88	5430	92	4520	93	4230	94	3960	95	3700	105	115		
10	91	5930	94	4920	95	4620	96	4320	97	4040	106	116	10	90	5710	93	4750	94	4450	95	4170	96	3890	105	115		
15	92	6240	95	5190	96	4860	97	4550	98	4260	106	116	15	91	6020	94	5000	95	4680	96	4390	97	4100	105	115		
20	93	6620	96	5470	97	5130	98	4800	99	4490	106	116	20	92	6340	95	5270	96	4940	97	4620	98	4320	105	115		
25	92	7170	97	5790	98	5420	99	5080	100	4750	106	116	25	93	6710	96	5570	97	5220	98	4890	99	4570	105	115		
30	92	7790	98	6130	99	5750	100	5380	101	5030	106	116	30	93	7270	97	5900	98	5530	99	5180	100	4840	105	115		
35	91	8500	99	6520	100	6110	101	5720	102	5350	106	116	35	92	7930	98	6270	99	5870	100	5500	101	5140	105	115		
39	91	9160	100	6860	101	6430	102	6020	102	5620	106	116	40	92	8690	99	6670	100	6250	101	5850	101	5470	105	115		
40	91	9330	100	6950	101	6510	102	6090	103	5690	106	116	41	92	8860	99	6760	100	6330	101	5930	102	5540	105	115		
41	91	9520	101	7050	101	6600	102	6170	103	5770	106	116	42	92	9030	100	6850	100	6420	101	6010	102	5610	105	115		

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	
						10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS			
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	90	4640	90	3540	90	3240	90	2950	90	2690	104	115	-35	90	4620	90	3540	90	3230	90	2950	90	2690	102	113		
-30	90	4730	90	3610	90	3300	90	3010	90	2750	104	115	-30	90	4700	90	3600	90	3290	90	3010	90	2740	102	113		
-25	89	4810	89	3670	89	3350	89	3060	90	2820	104	115	-25	90	4780	90	3660	90	3350	90	3060	90	2790	102	113		
-20	89	4890	89	3730	89	3410	89	3110	90	2890	104	114	-20	89	4850	89	3720	89	3400	89	3110	89	2830	102	113		
-15	88	4870	88	3720	88	3420	89	3190	90	2980	104	114	-15	88	4840	88	3710	88	3390	88	3100	88	2830	102	113		
-10	87	4840	88	3770	89	3540	90	3310	91	3090	104	114	-10	87	4800	87	3680	87	3370	88	3130	89	2920	102	113		
-5	86	4800	88	3920	89	3670	90	3430	91	3210	104	114	-5	86	4760	86	3690	87	3460	88	3230	89	3020	102	112		
0	85	4900	89	4070	90	3820	91	3570	92	3340	104	114	0	84	4710	87	3830	88	3590	89	3360	90	3130	102	112		
5	86	5110	90	4250	91	3980	92	3730	93	3480	104	114	5	84	4810	88	3990	89	3740	90	3500	91	3270	102	112		
10	88	5370	91	4460	92	4180	93	3920	94	3660	104	114	10	86	5040	89	4190	90	3930	91	3680	92	3430	102	112		
15	89	5650	92	4690	93	4400	94	4120	95	3850	104	114	15	87	5300	90	4400	91	4130	92	3860	93	3610	102	112		
20	90	5950	93	4940	94	4640	95	4340	96	4060	104	114	20	88	5580	91	4640	92	4350	93	4070	94	3800	102	112		
25	91	6280	94	5220	95	4890	96	4580	97	4280	104	114	25	89	5890	92	4890	93	4580	94	4290	95	4010	102	112		
30	92	6660	95	5520	96	5180	97	4850	98	4530	104	114	30	90	6220	93	5170	94	4850	95	4540	96	4240	102	112		
35	93	7070	96	5860	97	5490	98	5140	99	4810	104	114	35	91	6600	94	5480	95	5140	96	4810	97	4490	102	112		
40	93	7670	97	6230	98	5840	99	5470	99	5110	104	114	40	93	7020	95	5820	96	5450	97	5110	97	4770	102	112		
42	93	7970	98	6400	98	5990	99	5610	100	5240	104	114	42	93	7200	96	5970	96	5590	97	5230	98	4890	102	112		

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS				
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	90	4600	90	3530	90	3230	90	2950	90	2690	100	112	-35	90	4580	90	3530	90	3230	90	2960	90	2700	98	111
-30	90	4680	90	3600	90	3290	90	3010	90	2740	100	112	-30	90	4660	90	3600	90	3290	90	3010	90	2750	98	111
-25	90	4750	90	3650	90	3340	90	3060	90	2790	100	112	-25	90	4740	90	3650	90	3350	90	3060	90	2800	98	111
-20	89	4830	89	3710	89	3400	89	3110	89	2840	100	112	-20	90	4810	90	3710	90	3400	90	3110	90	2840	98	111
-15	88	4810	88	3700	88	3390	88	3100	88	2830	100	112	-15	89	4790	89	3690	89	3380	89	3100	89	2830	98	110
-10	87	4770	87	3670	87	3360	87	3070	87	2800	100	111	-10	87	4740	87	3660	87	3360	87	3070	87	2810	98	110
-5	86	4730	86	3640	86	3330	86	3050	87	2850	100	111	-5	86	4700	86	3630	86	3320	86	3040	86	2780	98	110
0	85	4680	85	3610	86	3380	87	3160	88	2950	100	111	0	85	4650	85	3590	85	3290	85	3010	85	2780	98	109
5	83	4610	85	3750	86	3510	87	3290	88	3070	100	110	5	83	4580	83	3540	84	3310	85	3090	86	2890	98	109
10	83	4730	87	3930	88	3680	88	3450	89	3220	100	110	10	81	4480	84	3690	85	3450	86	3230	87	3010	98	109
15	85	4970	88	4130	89	3870	89	3620	90	3380	100	110	15	82	4660	85	3870	86	3620	87	3390	88	3160	98	109
20	86	5230	89	4340	90	4070	91	3810	91	3560	100	110	20	84	4890	86	4060	87	3810	88	3560	89	3330	98	109
25	87	5510	90	4580	91	4290	92	4010	92	3750	100	110	25	85	5150	88	4280	88	4010	89	3750	90	3500	98	108
30	88	5820	91	4830	92	4530	93	4240	93	3960	100	110	30	86	5440	89	4520	90	4230	90	3960	91	3700	98	108
35	89	6160	92	5120	93	4800	94	4490	94	4190	100	110	35	87	5760	90	4780	91	4480	91	4190	92	3910	98	108
40	91	6550	93	5430	94	5090	95	4760	95	4450	100	110	40	89	6100	91	5060	92	4750	92	4440	93	4150	98	108
42	91	6710	94	5570	94	5270	95	4880	96	4560	100	110	42	89	6250	91	5190	92	4860	93	4550	93	4250	98	108

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS							WEIGHT = 13000 LBS							WEIGHT = 13000 LBS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS									
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS											
			V1 DIST		V1 DIST		V1 DIST						V1 DIST		V1 DIST		V1 DIST						V1 DIST		V1 DIST		V1 DIST											
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS
-35	91	4570	91	3540	91	3240	91	2970	91	2710	97	109	-35	91	4570	91	3550	91	3260	91	2980	91	2730	96	110	-35	91	4570	91	3550	91	3260	91	2980	91	2730	96	110
-30	91	4650	91	3600	91	3300	91	3020	91	2770	97	109	-30	91	4650	91	3610	91	3320	91	3040	91	2780	96	109	-30	91	4650	91	3610	91	3320	91	3040	91	2780	96	109
-25	90	4720	90	3660	90	3350	90	3070	90	2810	97	109	-25	91	4720	91	3670	91	3360	91	3090	91	2830	96	109	-25	91	4720	91	3670	91	3360	91	3090	91	2830	96	109
-20	90	4790	90	3710	90	3400	90	3120	90	2850	97	109	-20	90	4790	90	3720	90	3410	90	3130	90	2870	96	109	-20	90	4790	90	3720	90	3410	90	3130	90	2870	96	109
-15	89	4770	89	3690	89	3390	89	3100	89	2840	97	109	-15	89	4760	89	3700	89	3400	89	3110	89	2850	95	108	-15	89	4760	89	3700	89	3400	89	3110	89	2850	95	108
-10	88	4720	88	3660	88	3360	88	3080	88	2810	97	109	-10	88	4710	88	3660	88	3360	88	3080	88	2820	95	107	-10	88	4710	88	3660	88	3360	88	3080	88	2820	95	107
-5	86	4670	86	3620	86	3320	86	3040	86	2780	96	108	-5	87	4660	87	3620	87	3320	87	3050	87	2790	95	107	-5	87	4660	87	3620	87	3320	87	3050	87	2790	95	107
0	85	4620	85	3580	85	3280	85	3010	85	2750	96	108	0	85	4600	85	3580	85	3280	85	3010	85	2760	95	107	0	85	4600	85	3580	85	3280	85	3010	85	2760	95	107
5	83	4550	83	3520	83	3230	83	2960	84	2710	96	108	5	84	4520	84	3520	84	3230	84	2960	84	2710	95	106	5	84	4520	84	3520	84	3230	84	2960	84	2710	95	106
10	82	4440	82	3460	83	3240	84	3030	84	2830	96	107	10	82	4420	82	3430	82	3150	82	2890	82	2650	94	106	10	82	4420	82	3430	82	3150	82	2890	82	2650	94	106
15	80	4360	83	3620	84	3390	85	3170	85	2950	96	107	15	80	4310	80	3390	81	3180	82	2970	83	2770	94	105	15	80	4310	80	3390	81	3180	82	2970	83	2770	94	105
20	81	4580	84	3800	85	3560	86	3330	87	3100	96	107	20	79	4280	82	3550	82	3320	83	3100	84	2890	94	105	20	79	4280	82	3550	82	3320	83	3100	84	2890	94	105
25	82	4810	85	4000	86	3740	87	3500	88	3270	96	107	25	80	4490	83	3730	84	3490	84	3260	85	3040	94	105	25	80	4490	83	3730	84	3490	84	3260	85	3040	94	105
30	84	5080	86	4210	87	3950	88	3690	89	3450	96	107	30	81	4740	84	3930	85	3680	85	3440	86	3210	94	105	30	81	4740	84	3930	85	3680	85	3440	86	3210	94	105
35	85	5370	88	4450	88	4170	89	3900	90	3640	96	107	35	83	5000	85	4150	86	3880	87	3630	87	3390	94	105	35	83	5000	85	4150	86	3880	87	3630	87	3390	94	105
40	86	5690	89	4720	89	4420	90	4130	91	3860	96	107	40	84	5290	86	4390	87	4110	88	3840	88	3590	94	105	40	84	5290	86	4390	87	4110	88	3840	88	3590	94	105
42	87	5820	89	4830	90	4530	91	4230	91	3950	96	107	42	85	5420	87	4490	87	4210	88	3930	89	3670	94	105	42	85	5420	87	4490	87	4210	88	3930	89	3670	94	105

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS							WEIGHT = 12000 LBS							WEIGHT = 12000 LBS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS									
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS											
			V1 DIST		V1 DIST		V1 DIST						V1 DIST		V1 DIST		V1 DIST						V1 DIST		V1 DIST		V1 DIST											
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS
-35	91	4580	91	3570	91	3280	91	3010	91	2750	97	111	-35	92	4590	92	3590	92	3300	92	3040	92	2790	98	112	-35	92	4590	92	3590	92	3300	92	3040	92	2790	98	112
-30	91	4660	91	3630	91	3330	91	3060	91	2810	97	110	-30	91	4670	91	3650	91	3360	91	3090	91	2840	98	111	-30	91	4670	91	3650	91	3360	91	3090	91	2840	98	111
-25	91	4720	91	3680	91	3380	91	3110	91	2850	97	110	-25	91	4730	91	3710	91	3410	91	3130	91	2880	97	111	-25	91	4730	91	3710	91	3410	91	3130	91	2880	97	111
-20	91	4790	91	3730	91	3430	91	3150	91	2890	96	110	-20	91	4800	91	3760	91	3460	91	3180	91	2920	97	111	-20	91	4800	91	3760	91	3460	91	3180	91	2920	97	111
-15	89	4760	89	3710	89	3410	89	3130	89	2870	95	108	-15	90	4760	90	3730	90	3430	90	3160	90	2900	96	109	-15	90	4760	90	3730	90	3430	90	3160	90	2900	96	109
-10	88	4710	88	3670	88	3370	88	3100	88	2840	94	107	-10	89	4710	89	3690	89	3390	89	3120	89	2860	94	108	-10	89	4710	89	3690	89	3390	89	3120	89	2860	94	108
-5	87	4650	87	3630	87	3330	87	3060	87	2800	93	106	-5	87	4650	87	3640	87	3350	87	3080	87	2820	93	106	-5	87	4650	87	3640	87	3350	87	3080	87	2820	93	106
0	86	4590	86	3580	86	3290	86	3020	86	2770	93	105	0	86	4580	86	3590	86	3300	86	3030	86	2780	91	104	0	86	4580	86	3590	86	3300	86	3030	86	2780	91	104
5	84	4510	84	3520	84	3230	84	2960	84	2710	93	105	5	84	4500	84	3520	84	3240	84	2970	84	2730	91	103	5	84	4500	84	3520	84	3240	84	2970	84	2730	91	103
10	82	4400	82	3430	82	3150	82	2890	82	2640	93	104	10	82	4380	82	3430	82	3150	82	2890	82	2650	91	103	10	82	4380	82	3430	82	3150	82	2890	82	2650	91	103
15	80	4290	80	3340	80	3070	80	2810	80	2590	92	104	15	80	4270	80	3340	80	3070	80	2810	80	2580	90	102	15	80	4270	80	3340	80	3070	80	2810	80	2580	90	102
20	78	4180	79	3320	80	3110	81	2900	81	2700	92	103	20	78	4160	78	3250	78	2980	78	2730	79	2520	90	102	20	78	4160	78	3250	78	2980	78	2730	79	2520	90	102
25	77	4190	80	3470	81	3250	82	3040	82	2830	92	103	25	76	4050	77	3240	78	3030	79	2830	80	2640	90	101	25	76	4050	77	3240	78	3030	79	2830	80	2640	90	101
30	79	4410	81	3660	82	3420	83	3200	84	2980	92	103	30	76	4110	79	3400	79	3180	80	2970	81	2760	90	101	30	76	4110	79	3400	79	3180	80	2970	81	2760	90	101
35	80	4650	83	3860	83	3610	84	3370	85	3150	92	103	35	78	4320	80	3580	81	3350	81	3130	82	2920	90	101	35	78	4320	80	3580	81	3350	81	3130	82	2920	90	101
40	82	4920	84	4080	85	3820	85	3570	86	3330	92	103	40	79	4570	81	3780	82	3540	83	3310	83	3080	90	101	40	79	4570	81	3780	82	3540	83	3310	83	3080	90	101
42	82	5030	84	4170	85	3910	86	3650	86	3400	92	103	42	80	4670	82	3870	82	3620	83	3380	84	3150	90	101	42	80	4670	82	3870	82	3620	83	3380	84	3150	90	101

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS							WEIGHT = 11000 LBS							WEIGHT = 11000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS 						

Figure S25-2 (Sheet 14 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS									
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	20 KTS	30 KTS		VR	V2		10 KTS	20 KTS	30 KTS	VR	V2					
KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT						
-35	89	4840	90	3760	91	3520	92	3290	93	3070	107	117	-35	89	4820	89	3670	90	3410	91	3180	92	2970	106	116
-30	88	4880	90	3870	91	3630	92	3390	93	3160	107	117	-30	88	4860	89	3740	90	3510	91	3270	92	3050	106	116
-25	88	4910	91	3990	92	3740	93	3500	94	3260	107	117	-25	88	4890	89	3860	90	3610	91	3380	92	3150	106	116
-20	87	4960	91	4120	92	3860	93	3610	94	3370	107	117	-20	87	4910	90	3980	91	3730	92	3490	93	3250	106	116
-15	88	5150	91	4280	93	4010	94	3750	95	3510	107	117	-15	86	4970	90	4130	91	3870	92	3620	93	3380	105	116
-10	88	5350	92	4440	93	4170	94	3900	95	3640	107	116	-10	87	5160	91	4290	92	4020	93	3760	94	3520	105	116
-5	89	5560	93	4620	94	4330	95	4060	96	3790	106	116	-5	88	5360	91	4460	93	4180	94	3910	95	3660	105	115
0	90	5790	93	4810	94	4510	95	4230	96	3950	106	116	0	89	5580	92	4640	93	4350	94	4070	95	3810	105	115
5	91	6060	94	5040	95	4730	96	4430	97	4140	106	116	5	89	5840	93	4860	94	4560	95	4270	96	3990	105	115
10	92	6370	95	5290	96	4970	97	4650	98	4350	106	116	10	90	6130	94	5100	95	4780	96	4480	97	4190	105	115
15	91	6820	96	5580	97	5230	98	4900	99	4580	106	116	15	92	6460	95	5370	96	5040	97	4720	98	4410	105	115
20	91	7360	97	5890	98	5530	99	5180	100	4840	106	116	20	92	6890	96	5670	97	5320	98	4980	99	4660	105	115
25	90	7980	98	6240	99	5850	100	5480	101	5120	106	116	25	91	7460	97	6000	98	5620	99	5270	100	4930	105	115
30	90	8690	99	6630	100	6210	101	5820	101	5440	106	116	30	91	8110	98	6360	99	5970	100	5590	100	5230	105	115
34	90	9350	100	6970	101	6530	101	6110	102	5720	106	116	35	90	8880	99	6770	100	6350	100	5940	101	5560	105	115
35	89	9520	100	7060	101	6610	102	6190	102	5790	106	116	36	90	9050	99	6860	100	6430	101	6020	101	5630	105	115
36	89	9710	100	7150	101	6700	102	6270	102	5860	106	116	40	90	9780	100	7220	101	6770	101	6340	102	5920	105	115

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS											
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	20 KTS	30 KTS		VR	V2		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	20 KTS	30 KTS		VR	V2													
KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT										
-35	89	4780	89	3650	89	3340	89	3040	90	2810	104	114	-35	90	4750	90	3640	90	3330	90	3040	90	2770	102	113														
-30	89	4820	89	3680	89	3360	89	3100	90	2890	104	114	-30	89	4790	89	3670	89	3360	89	3060	89	2790	102	113														
-25	88	4850	88	3710	88	3410	89	3190	90	2980	104	114	-25	88	4820	88	3690	88	3380	88	3080	88	2810	102	113														
-20	87	4870	87	3750	88	3520	90	3290	91	3070	104	114	-20	87	4830	87	3710	87	3390	87	3110	88	2900	102	113														
-15	86	4840	88	3890	89	3640	90	3410	91	3180	104	114	-15	86	4800	86	3690	87	3440	88	3220	89	3000	102	112														
-10	85	4860	89	4040	90	3780	91	3540	92	3310	104	114	-10	85	4770	86	3800	88	3560	88	3330	89	3110	102	112														
-5	86	5050	89	4200	90	3930	91	3680	92	3440	104	114	-5	84	4750	87	3940	88	3700	89	3460	90	3230	102	112														
0	87	5240	90	4360	91	4090	92	3830	93	3580	104	114	0	84	4930	88	4100	89	3840	90	3600	91	3360	102	112														
5	88	5490	91	4560	92	4280	93	4010	94	3750	104	114	5	85	5150	89	4290	90	4020	91	3760	92	3520	102	112														
10	89	5760	92	4790	93	4490	94	4210	95	3930	104	114	10	87	5400	90	4490	91	4210	92	3940	92	3690	102	112														
15	90	6060	93	5040	94	4720	95	4420	96	4140	104	114	15	88	5680	91	4720	92	4430	93	4150	93	3880	102	112														
20	91	6390	94	5310	95	4980	96	4670	96	4360	104	114	20	89	5980	92	4970	93	4670	94	4370	94	4090	102	112														
25	92	6760	95	5610	96	5270	97	4930	97	4610	104	114	25	90	6320	93	5250	94	4930	94	4610	95	4310	102	112														
30	93	7210	96	5950	97	5580	98	5230	98	4890	104	114	30	91	6690	94	5560	95	5220	95	4880	96	4570	102	112														
35	92	7870	97	6320	98	5930	98	5550	99	5190	104	114	35	92	7110	95	5900	96	5530	96	5180	97	4850	102	112														
40	92	8620	98	6740	99	6310	99	5910	100	5530	103	114	40	93	7560	96	6280	97	5890	97	5510	98	5150	102	112														

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	V1 DIST	10 KTS		20 KTS	30 KTS		VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							VENR = 160 KIAS							WEIGHT = 13000 LBS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2 KIAS						
	10 KTS			10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS			10 KTS	20 KTS	30 KTS										
	V1	DIST		V1	DIST	V1	DIST	V1	DIST			V1	DIST		V1	DIST	V1	DIST	V1	DIST							
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT							
-35	90	4700	90	3640	90	3340	90	3060	90	2790	97	109	-35	91	4690	91	3650	91	3350	91	3070	91	2810	96	109		
-30	90	4730	90	3660	90	3360	90	3070	90	2810	97	109	-30	90	4720	90	3670	90	3370	90	3090	90	2830	95	108		
-25	89	4750	89	3680	89	3370	89	3090	89	2830	97	109	-25	89	4740	89	3680	89	3380	89	3100	89	2840	95	108		
-20	88	4760	88	3680	88	3380	88	3100	88	2830	97	109	-20	88	4740	88	3690	88	3390	88	3100	88	2840	95	107		
-15	87	4720	87	3660	87	3350	87	3070	87	2810	97	108	-15	87	4700	87	3660	87	3360	87	3080	87	2820	95	107		
-10	86	4680	86	3630	86	3330	86	3050	86	2790	96	108	-10	86	4660	86	3630	86	3330	86	3050	86	2790	95	107		
-5	84	4640	84	3600	84	3300	84	3020	84	2760	96	108	-5	85	4610	85	3590	85	3300	85	3020	85	2760	95	106		
0	83	4590	83	3560	83	3260	83	2990	84	2780	96	107	0	83	4570	83	3550	83	3260	83	2990	83	2730	94	106		
5	81	4510	82	3540	83	3320	84	3100	84	2890	96	107	5	82	4480	82	3490	82	3200	82	2930	82	2710	94	106		
10	80	4440	83	3690	84	3460	85	3230	85	3020	96	107	10	80	4390	80	3460	81	3240	82	3030	83	2830	94	105		
15	81	4650	84	3870	85	3620	86	3390	86	3170	96	107	15	78	4350	81	3610	82	3380	83	3160	84	2950	94	105		
20	82	4890	85	4060	86	3810	87	3560	87	3330	96	107	20	80	4560	83	3790	83	3550	84	3320	85	3100	94	105		
25	83	5150	86	4280	87	4010	88	3750	88	3510	96	107	25	81	4800	84	3990	84	3740	85	3500	86	3260	94	105		
30	85	5440	87	4520	88	4240	89	3960	89	3700	96	107	30	82	5060	85	4210	86	3940	86	3690	87	3440	94	105		
35	86	5750	88	4780	89	4480	90	4190	90	3920	96	107	35	84	5350	86	4450	87	4170	87	3900	88	3640	94	105		
40	87	6100	89	5070	90	4750	91	4450	91	4150	96	107	40	85	5670	87	4710	88	4410	88	4130	89	3860	94	105		

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2										
	10 KTS			20 KTS		30 KTS		10 KTS				20 KTS			30 KTS																
	V1	DIST		V1	DIST	V1	DIST	V1	DIST			V1	DIST		V1	DIST	V1	DIST	V1	DIST											
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT								
-35	91	4700	91	3660	91	3370	91	3090	91	2830	97	110	-35	91	4710	91	3690	91	3390	91	3120	91	2860	97	111						
-30	90	4720	90	3680	90	3380	90	3110	90	2850	96	109	-30	90	4730	90	3700	90	3410	90	3130	90	2870	97	110						
-25	89	4740	89	3690	89	3390	89	3120	89	2860	95	108	-25	90	4740	90	3710	90	3420	90	3140	90	2880	96	109						
-20	89	4740	89	3700	89	3400	89	3120	89	2860	94	107	-20	89	4740	89	3710	89	3420	89	3140	89	2880	95	108						
-15	87	4690	87	3660	87	3370	87	3090	87	2830	93	106	-15	88	4690	88	3680	88	3380	88	3110	88	2850	93	107						
-10	86	4650	86	3630	86	3340	86	3060	86	2810	93	105	-10	86	4650	86	3640	86	3350	86	3080	86	2820	92	105						
-5	85	4600	85	3590	85	3300	85	3030	85	2770	93	105	-5	85	4590	85	3600	85	3310	85	3040	85	2790	91	104						
0	83	4550	83	3550	83	3260	83	2990	83	2740	93	105	0	84	4530	84	3550	84	3270	84	3000	84	2750	91	103						
5	82	4460	82	3480	82	3200	82	2930	82	2680	92	104	5	82	4440	82	3480	82	3200	82	2940	82	2690	91	103						
10	80	4370	80	3410	80	3130	80	2870	80	2640	92	104	10	80	4350	80	3400	80	3130	80	2870	80	2630	90	102						
15	78	4270	79	3380	80	3160	80	2960	81	2760	92	103	15	78	4240	78	3320	78	3050	78	2800	79	2570	90	102						
20	77	4260	80	3530	81	3310	82	3090	82	2880	92	103	20	77	4140	77	3300	78	3090	79	2880	80	2690	90	101						
25	79	4470	81	3710	82	3480	83	3250	83	3030	92	103	25	76	4160	78	3450	79	3230	80	3020	81	2810	90	101						
30	80	4710	82	3910	83	3660	84	3430	84	3200	92	103	30	77	4380	80	3630	80	3400	81	3180	82	2960	90	101						
35	81	4980	84	4130	84	3870	85	3620	86	3380	92	103	35	79	4620	81	3830	82	3590	82	3350	83	3130	90	101						
40	82	5260	85	4370	85	4090	86	3830	87	3570	92	103	40	80	4880	82	4050	83	3790	83	3540	84	3310	90	101						

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																			
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	10 KTS	V1 DIST		V1 DIST	KIAS	FT	KIAS	FT	30 KTS			V1 DIST	V1 DIST		KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS		FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST	V1 DIST	KIAS	FT	30 KTS	V1 DIST

Figure S25-2 (Sheet 16 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2														
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS															
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS													
-35	88	4950	90	3950	91	3700	92	3460	93	3230	107	117	-35	88	4930	89	3810	90	3570	91	3340	92	3120	106	116						
-30	87	4940	91	4100	92	3840	93	3590	94	3350	107	117	-30	87	4910	90	3960	91	3710	92	3470	93	3240	106	116						
-25	87	5120	91	4260	92	3990	94	3730	95	3490	107	117	-25	86	4950	90	4110	91	3850	92	3600	93	3370	105	116						
-20	88	5320	92	4420	93	4140	94	3880	95	3630	107	117	-20	87	5130	91	4270	92	4000	93	3740	94	3500	105	116						
-15	89	5520	92	4590	94	4310	95	4030	96	3770	107	116	-15	88	5330	91	4430	92	4150	93	3890	94	3630	105	115						
-10	89	5740	93	4770	94	4480	95	4190	96	3920	106	116	-10	88	5530	92	4600	93	4320	94	4040	95	3780	105	115						
-5	90	5970	94	4970	95	4660	96	4360	97	4080	106	116	-5	89	5750	92	4790	93	4490	94	4210	95	3930	105	115						
0	91	6220	94	5170	95	4860	96	4550	97	4260	106	116	0	89	5990	93	4990	94	4680	95	4380	96	4100	105	115						
5	91	6560	95	5420	96	5090	97	4770	98	4460	106	116	5	90	6280	94	5220	95	4900	96	4590	97	4300	105	115						
10	90	7020	96	5700	97	5340	98	5010	99	4680	106	116	10	91	6580	95	5480	96	5140	97	4820	98	4510	105	115						
15	90	7560	97	6010	98	5640	99	5280	99	4940	106	116	15	91	7080	96	5780	97	5420	98	5080	99	4760	105	115						
20	89	8190	98	6350	99	5960	99	5580	100	5230	106	116	20	90	7660	97	6110	98	5730	99	5390	99	5030	105	115						
25	89	8900	99	6740	100	6320	100	5920	101	5540	106	116	25	90	8320	98	6470	99	6070	99	5690	100	5320	105	115						
30	88	9740	100	7180	100	6730	101	6300	102	5890	106	116	30	89	9100	98	6880	99	6450	100	6050	101	5660	105	115						
32			99	7460	101	6900	102	6460	102	6040	106	116	32	89	9440	99	7060	100	6620	100	6200	101	5800	105	115						
													35	89	9980	100	7330	100	6880	101	6440	102	6020	105	115						
													36			100	7430	100	6960	101	6520	102	6100	105	115						

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS				V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	V1 DIST	V1 DIST	V1 DIST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
																							KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR	V2										
			10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS													
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST						V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST												
-35	89	4830	89	3710	89	3400	89	3110	89	2840	100	112	-35	89	4810	89	3710	89	3400	89	3110	89	2840	98	110						
-30	88	4810	88	3700	88	3390	88	3100	88	2830	100	111	-30	88	4780	88	3690	88	3380	88	3100	88	2830	98	110						
-25	87	4780	87	3680	87	3370	87	3080	87	2820	100	111	-25	87	4760	87	3670	87	3370	87	3080	87	2810	98	110						
-20	85	4760	85	3670	85	3360	86	3130	87	2920	100	111	-20	86	4730	86	3650	86	3350	86	3060	86	2800	98	110						
-15	84	4740	85	3690	86	3460	87	3230	88	3020	100	111	-15	84	4700	84	3640	84	3330	84	3050	85	2840	98	109						
-10	83	4710	85	3820	86	3580	87	3350	88	3130	100	110	-10	83	4680	83	3610	84	3370	85	3150	86	2950	98	109						
-5	83	4770	86	3970	87	3720	88	3480	89	3250	100	110	-5	82	4640	84	3720	85	3490	85	3260	86	3050	98	109						
0	83	4950	87	4120	88	3870	88	3620	89	3380	100	110	0	81	4650	84	3860	85	3620	86	3390	87	3170	98	109						
5	84	5180	88	4310	88	4040	89	3790	90	3540	100	110	5	82	4850	85	4040	86	3780	87	3540	88	3310	98	109						
10	85	5420	88	4510	89	4230	90	3960	91	3710	100	110	10	83	5070	86	4220	87	3960	88	3710	89	3460	98	109						
15	86	5700	89	4740	90	4450	91	4170	92	3900	100	110	15	84	5330	87	4430	88	4160	89	3890	90	3640	98	109						
20	88	6000	90	5000	91	4690	92	4390	93	4110	100	110	20	85	5610	88	4670	89	4380	90	4100	91	3830	98	108						
25	89	6340	91	5280	92	4950	93	4640	94	4340	100	110	25	87	5920	89	4930	90	4620	91	4330	91	4050	98	108						
30	90	6720	93	5590	93	5250	94	4910	95	4600	100	110	30	88	6260	90	5210	91	4890	92	4580	92	4280	98	108						
35	91	7140	94	5930	94	5570	95	5210	96	4880	100	110	35	89	6640	91	5520	92	5180	93	4850	93	4540	98	108						
38	92	7400	94	6150	95	5770	95	5410	96	5060	100	110	38	90	6880	92	5720	93	5370	93	5030	94	4710	98	108						

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							VENR = 160 KIAS							WEIGHT = 13000 LBS							VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS						
	10 KTS				10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS														
	V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST													
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT						
-35	89	4790	89	3710	89	3400	89	3120	89	2850	97	109	-35	90	4780	90	3710	90	3410	90	3130	90	2870	95	108	-35	88	4760	88	3690	88	3380	88	3100	88	2840	97	109
-30	88	4760	88	3690	88	3380	88	3100	88	2840	97	109	-30	88	4750	88	3690	88	3390	88	3110	88	2850	95	107	-30	87	4730	87	3670	87	3360	87	3080	87	2820	97	108
-25	87	4730	87	3670	87	3360	87	3080	87	2820	97	108	-25	87	4720	87	3670	87	3370	87	3090	87	2830	95	107	-25	86	4710	86	3650	86	3350	86	3060	86	2800	96	108
-20	86	4710	86	3650	86	3350	86	3060	86	2800	96	108	-20	86	4690	86	3640	86	3350	86	3070	86	2810	95	107	-20	85	4680	85	3630	85	3330	85	3050	85	2790	96	108
-15	85	4680	85	3630	85	3330	85	3050	85	2790	96	108	-15	85	4650	85	3620	85	3320	85	3050	85	2790	95	107	-15	84	4640	84	3600	84	3300	84	3030	84	2770	96	108
-10	83	4640	83	3600	83	3300	83	3030	83	2770	96	108	-10	84	4620	84	3590	84	3300	84	3030	84	2770	95	106	-10	82	4610	82	3570	82	3280	83	3070	84	2860	96	107
-5	82	4610	82	3570	82	3280	83	3070	84	2860	96	107	-5	82	4580	82	3560	82	3270	82	3000	82	2740	94	106	-5	81	4560	82	3620	83	3400	84	3180	85	2970	96	107
0	81	4560	82	3620	83	3400	84	3180	85	2970	96	107	0	81	4530	81	3530	81	3240	81	2980	82	2780	94	106	0	80	4540	83	3770	84	3540	85	3310	85	3090	96	107
5	80	4540	83	3770	84	3540	85	3310	85	3090	96	107	5	80	4460	80	3540	81	3310	82	3100	83	2890	94	105	5	78	4470	84	3940	85	3700	85	3460	86	3230	96	107
10	81	4740	84	3940	85	3700	85	3460	86	3230	96	107	10	78	4430	81	3680	82	3450	83	3230	84	3010	94	105	10	82	4970	85	4140	86	3880	86	3630	87	3400	96	107
15	82	4970	85	4140	86	3880	86	3630	87	3400	96	107	15	80	4640	82	3860	83	3620	84	3390	85	3160	94	105	15	81	4880	83	4060	84	3800	85	3560	86	3320	94	105
20	83	5230	86	4350	87	4080	87	3820	88	3570	96	107	20	81	4880	83	4060	84	3800	85	3560	86	3320	94	105	20	82	5140	85	4270	85	4010	86	3750	87	3500	94	105
25	84	5520	87	4590	88	4310	88	4030	89	3770	96	107	25	82	5140	85	4270	85	4010	86	3750	87	3500	94	105	25	83	5420	86	4510	86	4230	87	3960	88	3700	94	105
30	86	5830	88	4850	89	4550	89	4260	90	3980	96	107	30	83	5420	86	4510	86	4230	87	3960	88	3700	94	105	30	84	5740	87	4770	87	4480	88	4190	89	3920	94	105
35	87	6170	89	5140	90	4820	90	4510	91	4220	96	107	35	84	5740	87	4770	87	4480	88	4190	89	3920	94	105	35	85	5940	87	4940	88	4630	89	4340	89	4050	94	105
38	87	6400	90	5320	90	4990	91	4670	92	4370	96	107	38	85	5940	87	4940	88	4630	89	4340	89	4050	94	105													

WEIGHT = 12500 LBS										VENR = 160 KIAS				WEIGHT = 12000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2		
	10 KTS V1 DIST KIAS	FT	10 KTS V1 DIST KIAS	FT	10 KTS		20 KTS		30 KTS					10 KTS V1 DIST KIAS	FT	10 KTS V1 DIST KIAS	FT	10 KTS		20 KTS		30 KTS					
					V1 DIST	FT	V1 DIST	FT	V1 DIST	FT								V1 DIST	FT	V1 DIST	FT	V1 DIST	FT			V1 DIST	FT
-35	90	4780	90	3730	90	3430	90	3150	90	2890	96	109	-35	90	4790	90	3750	90	3450	90	3170	90	2910	96	110		
-30	89	4750	89	3700	89	3400	89	3120	89	2860	94	107	-30	89	4750	89	3720	89	3420	89	3150	89	2890	95	108		
-25	88	4710	88	3670	88	3380	88	3100	88	2840	93	106	-25	88	4710	88	3690	88	3390	88	3120	88	2860	94	107		
-20	86	4670	86	3650	86	3350	86	3080	86	2820	93	105	-20	87	4670	87	3660	87	3370	87	3090	87	2840	92	105		
-15	85	4640	85	3620	85	3330	85	3060	85	2800	93	105	-15	85	4630	85	3630	85	3340	85	3070	85	2810	91	104		
-10	84	4600	84	3590	84	3300	84	3030	84	2780	93	105	-10	84	4590	84	3600	84	3310	84	3040	84	2790	91	103		
-5	83	4560	83	3560	83	3270	83	3000	83	2750	93	105	-5	83	4540	83	3560	83	3270	83	3010	83	2760	91	103		
0	81	4510	81	3520	81	3230	81	2970	81	2720	92	104	0	82	4490	82	3520	82	3230	82	2970	82	2720	91	103		
5	80	4430	80	3460	80	3170	80	2910	80	2710	92	104	5	80	4410	80	3450	80	3170	80	2910	80	2670	90	102		
10	78	4350	79	3440	80	3230	80	3020	81	2820	92	103	10	78	4320	78	3380	78	3110	78	2850	79	2630	90	102		
15	77	4330	80	3590	81	3370	81	3150	82	2940	92	103	15	77	4230	77	3360	78	3140	79	2940	79	2740	90	101		
20	78	4540	81	3770	82	3540	82	3310	83	3090	92	103	20	76	4220	78	3510	79	3280	80	3070	80	2860	90	101		
25	80	4780	82	3970	83	3720	84	3480	84	3250	92	103	25	77	4440	79	3690	80	3450	81	3230	82	3010	90	101		
30	81	5040	83	4190	84	3930	85	3680	85	3430	92	103	30	78	4680	81	3890	81	3640	82	3400	83	3180	90	101		
35	82	5330	84	4430	85	4150	86	3880	86	3630	92	103	35	80	4940	82	4100	82	3840	83	3600	84	3360	90	101		
38	83	5510	85	4580	86	4290	86	4020	87	3750	92	103	38	80	5110	82	4240	83	3970	84	3720	84	3470	90	101		

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS																	
															KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT		
-35	91	4810	91	3780	91	3480	91	3200	91	2950	97	111	-35	91	4840	91	3820	91	3520	91	3250	91	2990	98	112						
-30	89	4760	89	3740	89	3450	89	3180	89	2920	96	109	-30	90	4790	90	3780	90	3490	90	3220	90	2960	96	111						
-25	88	4720	88	3710	88	3420	88	3150	88	2890	94	108	-25	88	4740	88	3740	88	3450	88	3180	88	2930	95	109						
-20	87	4680	87	3680	87	3390	87	3120	87	2860	93	106	-20	87	4690	87	3700	87	3420	87	3150	87	2900	93	107						
-15	86	4630	86	3640	86	3360	86	3090	86	2840	91	105	-15	86	4650	86	3670	86	3380	86	3120	86	2870	92	106						
-10	85	4590	85	3610	85	3320	85	3060	85	2810	90	103	-10	85	4600	85	3630	85	3340	85	3080	85	2830	91	104						
-5	83	4540	83	3570	83	3280	83	3020	83	2770	89	102	-5	84	4540	84	3580	84	3300	84	3040	84	2790	89	103						
0	82	4480	82	3520	82	3240	82	2980	82	2730	88	101	0	82	4480	82	3530	82	3260	82	3000	82	2750	87	101						
5	80	4390	80	3450	80	3170	80	2920	80	2680	88	101	5	81	4390	81	3460	81	3180	81	2930	81	2690	86	99						
10	79	4310	79	3380	79	3110	79	2860	79	2620	88	100	10	79	4290	79	3380	79	3120	79	2860	79	2630	86	99						
15	77	4200	77	3300	77	3030	77	2780	77	2550	88	100	15	77	4190	77	3290	77	3030	77	2790	77	2550	86	98						
20	75	4100	76	3260	76	3060	77	2860	78	2660	88	99	20	75	4080	75	3210	75	2950	75	2710	75	2480	86	98						
25	74	4120	77	3420	77	3200	78	2990	79	2790	88	99	25	73	3980	74	3170	75	2970	75	2770	76	2580	86	97						
30	76	4330	78	3600	79	3370	79	3150	80	2940	88	99	30	73	4010	75	3320	76	3110	76	2900	77	2700	86	97						
35	77	4570	79	3790	80	3550	80	3320	81	3100	88	99	35	74	4220	76	3500	77	3270	78	3060	78	2850	86	97						
38	78	4720	80	3920	80	3670	81	3430	82	3200	88	99	38	75	4360	77	3610	78	3380	78	3160	79	2940	86	97						

Figure S25-2 (Sheet 18 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7⁰
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	87 5100	91 4230	92 3970	93 3710	94 3470	107 117	-35	86 4920	90 4080	91 3830	92 3580	93 3350	105 116
-30	88 5290	92 4400	93 4120	94 3860	95 3610	107 117	-30	87 5110	91 4240	92 3980	93 3720	94 3480	105 116
-25	89 5490	92 4570	93 4280	94 4010	95 3750	107 116	-25	87 5300	91 4410	92 4130	93 3870	94 3620	105 115
-20	89 5710	93 4750	94 4450	95 4170	96 3900	106 116	-20	88 5500	92 4580	93 4290	94 4020	95 3760	105 115
-15	90 5930	93 4930	94 4630	95 4340	96 4060	106 116	-15	89 5710	92 4760	93 4460	94 4180	95 3910	105 115
-10	90 6160	94 5130	95 4820	96 4510	97 4220	106 116	-10	89 5940	93 4950	94 4640	95 4350	96 4070	105 115
-5	91 6430	94 5340	95 5020	96 4700	97 4400	106 116	-5	90 6180	93 5150	94 4830	95 4530	96 4240	105 115
0	90 6830	95 5580	96 5240	97 4910	98 4600	106 116	0	90 6450	94 5370	95 5040	96 4730	97 4420	105 115
5	89 7280	96 5840	97 5490	98 5140	99 4810	106 116	5	90 6830	95 5620	96 5280	97 4950	97 4630	105 115
10	89 7790	96 6140	97 5760	98 5410	99 5060	106 116	10	90 7310	95 5900	96 5550	97 5200	98 4860	105 115
15	88 8420	97 6490	98 6090	99 5710	100 5340	106 116	15	89 7890	96 6230	97 5850	98 5490	99 5140	105 115
20	88 9130	98 6870	99 6450	100 6040	101 5660	106 116	20	89 8550	97 6600	98 6190	99 5800	100 5430	105 115
25	87 9980	98 7430	100 6850	101 6420	102 6010	106 116	25	88 9320	98 7010	99 6570	100 6160	101 5770	105 115
26		98 7570	100 6940	101 6500	102 6080	106 116	28	88 9840	99 7270	100 6820	100 6390	101 5980	105 115
28		98 7860	101 7110	101 6670	102 6240	106 116	30		99 7520	100 7000	101 6560	101 6140	105 115
							31		99 7660	100 7090	101 6640	102 6210	105 115

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	86 4860	88 3850	89 3610	90 3370	91 3150	104 114	-35	87 4820	87 3700	87 3410	88 3190	89 2970	102 112
-30	85 4850	88 3990	90 3740	91 3500	91 3270	104 114	-30	85 4810	86 3760	87 3530	88 3300	89 3080	102 112
-25	85 4990	89 4150	90 3890	91 3640	92 3400	104 114	-25	84 4790	87 3900	88 3660	89 3420	90 3200	102 112
-20	86 5170	90 4310	91 4040	92 3780	93 3530	104 114	-20	84 4870	87 4050	88 3790	89 3550	90 3320	102 112
-15	87 5370	90 4470	91 4190	92 3930	93 3670	104 114	-15	85 5050	88 4200	89 3940	90 3690	91 3450	102 112
-10	87 5580	91 4650	92 4360	93 4090	94 3820	104 114	-10	85 5240	89 4360	90 4090	90 3830	91 3580	102 112
-5	88 5800	91 4830	92 4540	93 4250	94 3980	104 114	-5	86 5440	89 4540	90 4260	91 3990	92 3730	102 112
0	89 6050	92 5040	93 4730	94 4440	95 4150	104 114	0	87 5670	90 4730	91 4440	92 4160	93 3890	102 112
5	89 6330	93 5270	94 4950	94 4640	95 4340	104 114	5	87 5930	91 4940	92 4640	92 4350	93 4070	102 112
10	90 6640	93 5530	94 5190	95 4870	96 4560	104 114	10	88 6210	91 5180	92 4860	93 4560	94 4260	102 112
15	91 7050	94 5830	95 5480	96 5130	97 4810	104 114	15	89 6550	92 5450	93 5120	94 4800	95 4490	102 112
20	90 7620	95 6170	96 5790	97 5430	98 5080	104 114	20	90 6910	93 5760	94 5410	95 5070	96 4740	102 112
25	89 8290	96 6540	97 6140	98 5750	99 5380	104 114	25	91 7330	94 6100	95 5730	96 5370	97 5020	102 112
30	89 9070	97 6950	98 6520	99 6110	99 5720	103 114	30	91 7980	95 6480	96 6080	97 5700	97 5330	102 112
31	89 9230	97 7040	98 6610	99 6190	100 5790	103 114	35	91 8720	96 6890	97 6460	98 6060	98 5670	102 112
35	89 9940	98 7400	99 6940	100 6510	100 6090	103 114	36	91 8890	96 6970	97 6540	98 6130	98 5740	102 112

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	87 4790	87 3680	87 3370	87 3080	87 2820	100 111	-35	87 4760	87 3680	87 3370	87 3080	87 2820	98 110
-30	86 4770	86 3670	86 3360	86 3110	87 2900	100 111	-30	86 4740	86 3660	86 3360	86 3070	86 2810	98 110
-25	84 4750	85 3670	86 3440	86 3220	87 3010	100 111	-25	85 4720	85 3650	85 3340	85 3060	85 2830	98 109
-20	83 4740	85 3800	86 3560	87 3330	88 3110	100 110	-20	84 4700	84 3630	84 3360	85 3140	86 2930	98 109
-15	82 4740	86 3940	87 3700	88 3460	88 3230	100 110	-15	82 4680	83 3700	84 3470	85 3250	86 3030	98 109
-10	83 4920	86 4090	87 3840	88 3590	89 3360	100 110	-10	81 4650	84 3830	85 3600	86 3370	87 3140	98 109
-5	84 5100	87 4250	88 3990	89 3740	90 3490	100 110	-5	81 4780	85 3980	86 3730	86 3500	87 3270	98 109
0	85 5310	88 4430	89 4160	89 3890	90 3640	100 110	0	82 4970	85 4140	86 3890	87 3640	88 3400	98 109
5	85 5550	88 4620	89 4340	90 4070	91 3800	100 110	5	83 5190	86 4320	87 4060	88 3800	89 3550	98 109
10	86 5810	89 4840	90 4550	91 4260	92 3990	100 110	10	84 5430	87 4520	88 4250	89 3980	89 3720	98 109
15	87 6120	90 5100	91 4790	92 4490	93 4200	100 110	15	85 5710	88 4760	89 4470	90 4190	90 3920	98 108
20	88 6450	91 5380	92 5050	93 4730	94 4430	100 110	20	86 6020	89 5010	90 4710	91 4410	91 4130	98 108
25	90 6830	92 5690	93 5340	94 5000	94 4680	100 110	25	87 6360	90 5300	91 4970	92 4660	92 4360	98 108
30	91 7240	93 6030	94 5660	95 5310	95 4970	100 110	30	89 6740	91 5610	92 5270	92 4940	93 4620	98 108
35	92 7630	94 6400	95 6010	95 5630	96 5270	100 110	35	90 7150	92 5950	93 5590	93 5240	94 4900	98 108
36	92 7790	94 6480	95 6080	96 5700	96 5340	100 110	36	90 7240	92 6020	93 5650	94 5300	94 4960	98 108

Figure S25-2 (Sheet 19 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-35	87 4740	87 3670	87 3370	87 3080	87 2820	97 109	-35	87 4720	87 3670	87 3370	87 3090	87 2830	95 107
-30	86 4720	86 3650	86 3350	86 3070	86 2810	96 108	-30	86 4700	86 3650	86 3350	86 3080	86 2820	95 107
-25	85 4690	85 3640	85 3340	85 3060	85 2800	96 108	-25	85 4670	85 3630	85 3340	85 3060	85 2800	95 107
-20	84 4670	84 3620	84 3320	84 3040	84 2780	96 108	-20	84 4650	84 3610	84 3320	84 3040	84 2780	95 106
-15	83 4650	83 3600	83 3310	83 3030	84 2850	96 107	-15	83 4620	83 3590	83 3300	83 3030	83 2770	94 106
-10	81 4620	82 3600	83 3380	83 3160	84 2950	96 107	-10	82 4590	82 3570	82 3280	82 3000	82 2770	94 106
-5	80 4580	82 3730	83 3490	84 3270	85 3050	96 107	-5	80 4550	80 3540	81 3280	82 3070	82 2860	94 105
0	80 4650	83 3870	84 3630	85 3400	86 3180	96 107	0	79 4500	80 3620	81 3400	82 3180	83 2970	94 105
5	81 4850	84 4040	85 3790	86 3550	86 3320	96 107	5	78 4530	81 3770	82 3530	83 3310	84 3090	94 105
10	82 5070	85 4220	86 3960	86 3710	87 3470	96 107	10	79 4730	82 3940	83 3690	84 3460	85 3230	94 105
15	83 5330	86 4440	87 4170	87 3900	88 3650	96 107	15	81 4960	83 4130	84 3880	85 3630	86 3390	94 105
20	84 5610	87 4670	88 4380	88 4110	89 3840	96 107	20	82 5220	84 4350	85 4080	86 3820	87 3570	94 105
25	85 5920	88 4930	89 4630	89 4340	90 4060	96 107	25	83 5510	85 4590	86 4300	87 4030	88 3770	94 105
30	86 6260	89 5220	90 4900	90 4590	91 4290	96 107	30	84 5820	87 4850	87 4550	88 4260	88 3980	94 105
35	88 6640	90 5530	91 5190	91 4860	92 4550	96 107	35	85 6160	88 5130	88 4810	89 4510	89 4220	94 105
36	88 6720	90 5590	91 5250	91 4920	92 4600	96 107	36	86 6230	88 5190	88 4870	89 4560	90 4270	94 105

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-35	88 4710	88 3680	88 3380	88 3100	88 2850	93 106	-35	88 4710	88 3690	88 3400	88 3120	88 2870	94 107
-30	87 4690	87 3660	87 3360	87 3090	87 2830	93 105	-30	87 4680	87 3670	87 3370	87 3100	87 2850	92 106
-25	85 4660	85 3630	85 3340	85 3070	85 2810	93 105	-25	86 4650	86 3640	86 3350	86 3080	86 2830	91 104
-20	84 4630	84 3610	84 3320	84 3050	84 2790	93 105	-20	85 4620	85 3620	85 3330	85 3060	85 2800	91 103
-15	83 4600	83 3590	83 3300	83 3030	83 2770	93 105	-15	83 4580	83 3590	83 3300	83 3030	83 2780	91 103
-10	82 4560	82 3560	82 3270	82 3000	82 2750	93 104	-10	82 4540	82 3560	82 3270	82 3010	82 2760	91 103
-5	81 4520	81 3530	81 3250	81 2980	81 2730	92 104	-5	81 4500	81 3530	81 3240	81 2980	81 2730	90 103
0	79 4470	79 3490	79 3210	80 2980	81 2780	92 104	0	80 4450	80 3480	80 3200	80 2940	80 2690	90 102
5	78 4410	79 3520	80 3300	80 3090	81 2880	92 103	5	78 4380	78 3430	78 3150	78 2890	79 2690	90 102
10	77 4410	80 3670	81 3440	81 3220	82 3000	92 103	10	77 4310	77 3420	77 3210	79 3000	79 2800	90 101
15	78 4620	81 3850	82 3610	82 3380	83 3150	92 103	15	76 4300	78 3570	79 3350	80 3130	80 2920	90 101
20	79 4850	82 4040	83 3790	83 3550	84 3310	92 103	20	77 4510	79 3750	80 3520	81 3290	81 3070	90 101
25	81 5120	83 4260	84 3990	84 3740	85 3490	92 103	25	78 4750	80 3950	81 3700	82 3460	82 3230	90 101
30	82 5400	84 4500	85 4220	85 3950	86 3690	92 103	30	79 5010	82 4170	82 3910	83 3650	83 3410	90 101
35	83 5710	85 4750	86 4460	86 4180	87 3900	92 103	35	80 5290	83 4400	83 4120	84 3860	84 3610	90 101
36	83 5780	85 4810	86 4510	87 4220	87 3950	92 103	36	81 5350	83 4450	83 4170	84 3900	85 3650	90 101

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-35	88 4730	88 3710	88 3420	88 3150	88 2890	94 108	-35	89 4750	89 3750	89 3460	89 3190	89 2930	95 109
-30	87 4690	87 3690	87 3400	87 3130	87 2870	93 107	-30	87 4710	87 3710	87 3430	87 3160	87 2900	94 108
-25	86 4650	86 3660	86 3370	86 3100	86 2850	92 105	-25	86 4660	86 3680	86 3400	86 3130	86 2880	92 106
-20	85 4620	85 3630	85 3340	85 3070	85 2820	90 104	-20	85 4620	85 3650	85 3370	85 3100	85 2850	91 105
-15	84 4580	84 3600	84 3310	84 3050	84 2800	89 102	-15	84 4580	84 3620	84 3330	84 3070	84 2820	90 103
-10	82 4540	82 3560	82 3280	82 3020	82 2770	88 101	-10	83 4540	83 3580	83 3300	83 3040	83 2790	88 101
-5	81 4490	81 3530	81 3250	81 2990	81 2740	88 101	-5	81 4490	81 3540	81 3260	81 3000	81 2760	87 100
0	80 4430	80 3480	80 3200	80 2950	80 2700	88 101	0	80 4420	80 3490	80 3210	80 2960	80 2710	86 99
5	78 4360	78 3430	78 3150	78 2900	78 2650	88 100	5	79 4350	79 3430	79 3160	79 2900	79 2660	86 99
10	77 4280	77 3360	77 3090	77 2840	77 2610	88 100	10	77 4260	77 3360	77 3090	77 2840	77 2610	86 98
15	75 4190	75 3330	76 3120	77 2910	78 2720	88 99	15	75 4160	75 3280	75 3010	75 2770	75 2540	86 98
20	74 4180	76 3470	77 3250	78 3040	79 2840	88 99	20	73 4070	74 3220	74 3020	75 2820	76 2630	86 97
25	75 4400	78 3650	78 3420	79 3200	80 2990	88 99	25	72 4060	75 3370	75 3160	76 2950	77 2750	86 97
30	77 4630	79 3850	80 3610	80 3370	81 3150	88 99	30	74 4280	76 3550	77 3320	77 3110	78 2900	86 97
35	78 4890	80 4060	81 3810	81 3560	82 3320	88 99	35	75 4510	77 3740	78 3500	78 3280	79 3060	86 97
36	78 4940	80 4110	81 3850	81 3600	82 3360	88 99	36	75 4550	77 3780	78 3540	79 3310	79 3090	86 97

Figure S25-2 (Sheet 20 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
10.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 160 KIAS									WEIGHT = 16000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS									
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS										
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT										
-35	89	5470	92	4550	93	4270	94	3990	95	3730	107	116	-35	87	5280	91	4390	92	4110	93	3850	94	3600	105	115										
-30	89	5680	93	4730	94	4430	95	4150	96	3880	106	116	-30	88	5480	92	4560	93	4280	94	4000	95	3740	105	115										
-25	90	5900	93	4910	94	4610	95	4320	96	4040	106	116	-25	88	5690	92	4740	93	4440	94	4160	95	3890	105	115										
-20	90	6130	94	5110	95	4790	96	4490	97	4200	106	116	-20	89	5910	93	4920	94	4620	95	4330	96	4050	105	115										
-15	90	6390	94	5310	95	4990	96	4670	97	4370	106	116	-15	90	6150	93	5120	94	4800	95	4500	96	4210	105	115										
-10	90	6750	95	5530	96	5190	97	4870	98	4560	106	116	-10	90	6390	94	5330	95	5000	96	4690	96	4390	105	115										
-5	89	7140	95	5770	96	5410	97	5070	98	4750	106	116	-5	90	6710	94	5550	95	5210	96	4880	97	4570	105	115										
0	88	7580	96	6020	97	5650	98	5300	99	4960	106	116	0	89	7120	95	5790	96	5440	97	5100	97	4780	105	115										
5	88	8070	96	6300	97	5910	98	5540	99	5190	106	116	5	89	7560	95	6050	96	5680	97	5330	98	4990	105	115										
10	87	8670	97	6630	98	6230	99	5840	100	5470	106	116	10	88	8130	96	6370	97	5990	98	5610	99	5260	105	115										
15	87	9390	98	7070	99	6590	100	6180	101	5790	106	116	15	88	8800	97	6740	98	6330	99	5930	99	5560	105	115										
20			97	7700	100	6990	101	6550	101	6140	106	116	20	87	9570	98	7150	99	6710	100	6290	100	5890	105	115										
21			97	7850	100	7080	101	6630	102	6210	106	116	23	87	10100	98	7520	99	6960	100	6520	101	6110	105	115										
23			97	8150	100	7250	101	6800	102	6370	106	116	25			97	7810	100	7130	100	6690	101	6260	105	115										
													27			97	8100	100	7320	101	6860	101	6420	105	115										

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S																					
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2							
-35	85	4970	89	4130	90	3870	91	3620	92	3390	104	114	-35	84	4790	87	3880	88	3640	89	3410	90	3180	102	112	-35	84	4790	87	3880	88	3640	89	3410	90	3180	102	112	
-30	86	5150	89	4290	91	4020	92	3770	92	3520	104	114	-30	84	4850	87	4030	88	3780	89	3540	90	3310	102	112	-30	84	4850	87	4030	88	3780	89	3540	90	3310	102	112	
-25	87	5350	90	4450	91	4180	92	3910	93	3660	104	114	-25	84	5030	88	4180	89	3920	90	3670	91	3430	102	112	-25	84	5030	88	4180	89	3920	90	3670	91	3430	102	112	
-20	87	5550	91	4630	92	4340	92	4070	93	3800	104	114	-20	85	5210	88	4340	89	4070	90	3820	91	3570	102	112	-20	85	5210	88	4340	89	4070	90	3820	91	3570	102	112	
-15	88	5770	91	4810	92	4510	93	4230	94	3960	104	114	-15	86	5410	89	4510	90	4230	91	3970	92	3710	102	112	-15	86	5410	89	4510	90	4230	91	3970	92	3710	102	112	
-10	88	6000	92	5000	93	4690	93	4400	94	4120	104	114	-10	86	5620	89	4690	90	4400	91	4120	92	3860	102	112	-10	86	5620	89	4690	90	4400	91	4120	92	3860	102	112	
-5	89	6240	92	5200	93	4880	94	4580	95	4290	104	114	-5	87	5850	90	4880	91	4580	92	4290	93	4020	102	112	-5	87	5850	90	4880	91	4580	92	4290	93	4020	102	112	
0	89	6510	93	5430	94	5100	95	4780	95	4480	104	114	0	88	6090	91	5080	92	4770	92	4480	93	4190	102	112	0	88	6090	91	5080	92	4770	92	4480	93	4190	102	112	
5	90	6800	93	5670	94	5320	95	4990	96	4680	104	114	5	88	6360	91	5300	92	4980	93	4670	94	4370	102	112	5	88	6360	91	5300	92	4980	93	4670	94	4370	102	112	
10	90	7270	94	5960	95	5600	96	5250	97	4920	104	114	10	89	6680	92	5580	93	5230	94	4910	95	4600	102	112	10	89	6680	92	5580	93	5230	94	4910	95	4600	102	112	
15	89	7860	95	6300	96	5910	97	5540	98	5200	104	114	15	90	7050	93	5880	94	5520	95	5180	95	4850	102	112	15	90	7050	93	5880	94	5520	95	5180	95	4850	102	112	
20	89	8520	96	6670	97	6260	98	5870	98	5500	104	114	20	90	7540	94	6220	95	5840	96	5480	96	5130	102	112	20	90	7540	94	6220	95	5840	96	5480	96	5130	102	112	
25	88	9310	97	7080	98	6650	98	6230	99	5840	104	114	25	90	8220	95	6590	96	6190	96	5810	97	5440	102	112	25	89	8980	96	7010	97	6580	97	6170	98	5780	102	112	
27	88	9650	97	7260	98	6810	99	6390	99	5980	103	114	30	89	8980	96	7010	97	6580	97	6170	98	5780	102	112	30	89	9150	96	7100	97	6660	97	6240	98	5850	102	112	
30			98	7640	99	7070	99	6630	100	6210	103	114	31	89	9150	96	7100	97	6660	97	6240	98	5850	102	112	31	89	9150	96	7100	97	6660	97	6240	98	5850	102	112	
31			98	7630	99	7160	99	6710	100	6290	103	114	34	89	9670	97	7360	97	6910	98	6480	99	6070	102	112	34	89	9670	97	7360	97	6910	98	6480	99	6070	102	112	

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					
-35	85	4750	85	3660	86	3430	86	3210	87	2990	100	111	-35	85	4720	85	3650	85	3340	85	3060	85	2820	98	109	-35	85	4720	85	3650	85	3340	85	3060	85	2820	98	109	
-30	83	4740	85	3790	86	3550	87	3320	88	3100	100	110	-30	84	4700	84	3640	84	3340	85	3130	86	2920	98	109	-30	84	4700	84	3640	84	3340	85	3130	86	2920	98	109	
-25	82	4730	86	3930	87	3680	88	3450	88	3220	100	110	-25	83	4690	83	3690	84	3460	85	3230	86	3020	98	109	-25	83	4690	83	3690	84	3460	85	3230	86	3020	98	109	
-20	83	4890	86	4070	87	3820	88	3580	89	3340	100	110	-20	81	4680	84	3820	85	3580	86	3350	87	3130	98	109	-20	81	4680	84	3820	85	3580	86	3350	87	3130	98	109	
-15	83	5070	87	4230	88	3970	89	3720	89	3470	100	110	-15	81	4760	84	3960	85	3710	86	3480	87	3250	98	109	-15	81	4760	84	3960	85	3710	86	3480	87	3250	98	109	
-10	84	5270	87	4390	88	4120	89	3860	90	3610	100	110	-10	82	4930	85	4110	86	3860	87	3610	88	3380	98	109	-10	82	4930	85	4110	86	3860	87	3610	88	3380	98	109	
-5	85	5470	88	4570	89	4290	90	4020	91	3760	100	110	-5	83	5120	86	4270	87	4010	87	3760	88	3510	98	109	-5	83	5120	86	4270	87	4010	87	3760	88	3510	98	109	
0	85	5700	89	4760	89	4470	90	4190	91	3920	100	110	0	83	5330	86	4450	87	4170	88	3910	89	3660	98	109	0	83	5330	86	4450	87	4170	88	3910	89	3660	98	109	
5	86	5950	89	4960	90	4660	91	4370	92	4090	100	110	5	84	5550	87	4630	88	4350	89	4080	89	3820	98	109	5	84	5550	87	4630	88	4350	89	4080	89	3820	98	109	
10	87	6240	90	5210	91	4890	92	4590	92	4290	100	110	10	85	5820	88	4860	89	4560	90	4280	90	4000	98	108	10	85	5820	88	4860	89	4560	90	4280	90	4000	98	108	
15	88	6580	91	5490	92	5150	93	4830	93	4520	100	110	15	86	6130	89	5120	90	4800	90	4500	91	4220	98	108	15	86	6130	89	5120	90	4800	90	4500	91	4220	98	108	
20	89	6950	92	5800	93	5440	93	5100	94	4780	100	110	20	87	6470	90	5400	91	5070	91	4750	92	4450	98	108	20	87	6470	90	5400	91	5070	91	4750	92	4450	98	108	
25	90	7360	93	6140	94	5760	94	5410	95	5060	100	110	25	88	6850	91	5710	92	5360	92	5030	93	4710	98	108	25	88	6850	91	5710	92	5360	92	5030	93	4710	98	108	
30	91	7830	94	6520	95	6120	95	5740	96	5370	100	110	30	89	7260	92	6050	92	5680	93	5330	94	4990	98	108	30	89	7260	92	6050	92	5680	93	5330	94	4990	98	108	
34	91	8420	95	6840	95	6420	96	6020	96	5640	100	110	34	90	7610	92	6350	93	5960	94	5590	94	5230	98	108	34	90	7610	92	6350	93	5960	94	5590	94	5230	98	108	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
10,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	85 4690	85 3640	85 3340	85 3060	85 2790	96 108	-35	85 4670	85 3630	85 3340	85 3060	85 2800	95 107
-30	84 4670	84 3630	84 3330	84 3050	84 2790	96 108	-30	84 4650	84 3620	84 3320	84 3050	84 2790	95 106
-25	83 4660	83 3610	83 3310	83 3040	84 2840	96 107	-25	83 4630	83 3600	83 3310	83 3030	83 2780	94 106
-20	82 4640	82 3600	82 3360	83 3150	84 2940	96 107	-20	82 4610	82 3590	82 3290	82 3020	82 2760	94 106
-15	81 4620	82 3710	83 3480	84 3260	85 3040	96 107	-15	81 4590	81 3570	81 3280	81 3050	82 2850	94 106
-10	80 4620	83 3840	84 3610	84 3380	85 3150	96 107	-10	80 4560	80 3600	81 3380	82 3160	83 2950	94 105
-5	80 4790	83 3990	84 3740	85 3510	86 3280	96 107	-5	78 4530	81 3720	82 3490	82 3270	83 3060	94 105
0	81 4980	84 4150	85 3900	86 3650	86 3410	96 107	0	79 4650	82 3870	82 3630	83 3400	84 3180	94 105
5	82 5180	85 4320	86 4060	86 3800	87 3560	96 107	5	79 4830	82 4030	83 3780	84 3540	85 3310	94 105
10	83 5430	86 4530	86 4250	87 3990	88 3730	96 107	10	81 5060	83 4220	84 3960	85 3710	85 3470	94 105
15	84 5710	87 4770	87 4470	88 4190	89 3920	96 107	15	82 5320	84 4430	85 4160	86 3900	86 3650	94 105
20	85 6020	88 5020	88 4720	89 4420	90 4140	96 107	20	83 5600	85 4670	86 4380	87 4110	87 3840	94 105
25	86 6360	89 5310	89 4990	90 4670	91 4370	96 107	25	84 5910	86 4930	87 4630	88 4340	88 4060	94 105
30	87 6740	90 5620	90 5280	91 4950	91 4630	96 107	30	85 6250	87 5210	88 4890	89 4590	89 4290	94 105
34	88 7060	90 5890	91 5530	92 5180	92 4850	96 107	34	86 6540	88 5460	89 5120	89 4800	90 4490	94 105

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	86 4660	86 3630	86 3340	86 3070	86 2810	93 105	-35	86 4650	86 3640	86 3350	86 3080	86 2830	91 104
-30	84 4630	84 3620	84 3320	84 3050	84 2800	93 105	-30	85 4620	85 3620	85 3330	85 3060	85 2810	91 104
-25	83 4610	83 3600	83 3310	83 3040	83 2780	93 105	-25	84 4600	84 3600	84 3310	84 3040	84 2790	91 103
-20	82 4590	82 3580	82 3290	82 3020	82 2770	93 104	-20	82 4570	82 3580	82 3290	82 3030	82 2770	91 103
-15	81 4560	81 3560	81 3270	81 3000	81 2750	92 104	-15	81 4540	81 3560	81 3270	81 3000	81 2750	90 103
-10	80 4530	80 3540	80 3250	80 2980	80 2760	92 104	-10	80 4500	80 3530	80 3250	80 2980	80 2730	90 102
-5	79 4500	79 3510	79 3270	80 3060	81 2860	92 104	-5	79 4470	79 3500	79 3220	79 2960	79 2710	90 102
0	77 4450	79 3620	80 3390	81 3170	81 2960	92 103	0	78 4420	78 3460	78 3180	78 2960	79 2770	90 102
5	77 4500	80 3750	81 3520	81 3290	82 3080	92 103	5	76 4370	77 3500	78 3280	79 3070	79 2870	90 101
10	78 4710	81 3930	81 3680	82 3450	83 3220	92 103	10	75 4380	78 3640	79 3420	80 3200	80 2990	90 101
15	79 4940	82 4120	82 3870	83 3620	84 3390	92 103	15	77 4590	79 3820	80 3590	81 3360	81 3140	90 101
20	80 5200	83 4340	84 4070	84 3810	85 3560	92 103	20	78 4820	80 4020	81 3770	82 3530	82 3300	90 101
25	82 5480	84 4570	85 4290	85 4020	86 3760	92 103	25	79 5080	81 4230	82 3970	83 3720	83 3480	90 101
30	83 5800	85 4830	86 4530	86 4250	87 3970	92 103	30	80 5360	82 4470	83 4190	84 3930	84 3670	90 101
34	84 6060	86 5050	86 4740	87 4440	87 4160	92 103	34	81 5600	83 4670	84 4380	84 4100	85 3840	90 101

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	86 4650	86 3660	86 3370	86 3100	86 2850	92 105	-35	86 4670	86 3680	86 3400	86 3130	86 2880	92 106
-30	85 4620	85 3630	85 3350	85 3080	85 2830	90 104	-30	85 4630	85 3650	85 3370	85 3100	85 2850	91 105
-25	84 4590	84 3610	84 3320	84 3060	84 2810	89 102	-25	84 4600	84 3630	84 3340	84 3080	84 2830	90 103
-20	83 4560	83 3590	83 3300	83 3040	83 2790	89 102	-20	83 4560	83 3600	83 3320	83 3060	83 2810	88 102
-15	82 4530	82 3560	82 3280	82 3010	82 2770	88 101	-15	82 4520	82 3570	82 3290	82 3030	82 2780	87 100
-10	80 4490	80 3530	80 3250	80 2990	80 2740	88 101	-10	81 4480	81 3530	81 3260	81 3000	81 2750	86 99
-5	79 4450	79 3500	79 3220	79 2960	79 2710	88 101	-5	79 4440	79 3500	79 3220	79 2970	79 2720	86 99
0	78 4400	78 3460	78 3180	78 2920	78 2680	88 100	0	78 4380	78 3450	78 3180	78 2930	78 2690	86 99
5	77 4350	77 3410	77 3140	77 2880	77 2670	88 100	5	77 4330	77 3410	77 3140	77 2890	77 2650	86 98
10	75 4270	75 3390	76 3180	77 2980	78 2780	88 100	10	75 4240	75 3340	75 3070	75 2820	75 2590	86 98
15	74 4260	76 3540	77 3320	78 3100	78 2900	88 99	15	73 4150	74 3290	74 3080	75 2880	76 2690	86 97
20	75 4470	77 3720	78 3490	79 3260	80 3050	88 99	20	72 4130	75 3430	75 3210	76 3000	77 2800	86 97
25	76 4700	79 3910	79 3670	80 3430	81 3210	88 99	25	74 4340	76 3610	76 3380	77 3160	78 2950	86 97
30	78 4960	80 4130	80 3870	81 3620	82 3380	88 99	30	75 4570	77 3800	78 3560	78 3330	79 3110	86 97
34	79 5170	81 4310	81 4040	82 3780	82 3530	88 99	34	76 4760	78 3960	78 3710	79 3470	80 3240	86 97

Figure S25-2 (Sheet 22 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
11,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEEDBRAKES - RETRACT
LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST
SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 160 KIAS									WEIGHT = 16000 LBS									VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	10 KTS			20 KTS		30 KTS		VR	V2	10 KTS			20 KTS			30 KTS		VR	V2	10 KTS		20 KTS			30 KTS			VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
11.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											WEIGHT = 13000 LBS														
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR V2 KIAS		
	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT			20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT						
-35	83	4660	83	3610	83	3310	83	3040	84	2830	96	107	-35	83	4630	83	3600	83	3310	83	3030	83	2780	94	106
-30	82	4650	82	3610	82	3350	83	3140	84	2930	96	107	-30	82	4620	82	3590	82	3300	82	3030	82	2770	94	106
-25	81	4630	82	3700	83	3470	84	3240	85	3030	96	107	-25	81	4600	81	3580	81	3290	81	3040	82	2840	94	106
-20	80	4620	82	3830	83	3590	84	3360	85	3140	96	107	-20	80	4580	80	3590	81	3360	82	3150	83	2940	94	105
-15	80	4770	83	3970	84	3730	85	3490	86	3260	96	107	-15	79	4560	81	3710	81	3480	82	3260	83	3040	94	105
-10	81	4940	84	4120	85	3870	85	3620	86	3390	96	107	-10	78	4610	81	3840	82	3610	83	3380	84	3160	94	105
-5	81	5130	84	4280	85	4020	86	3770	87	3520	96	107	-5	79	4790	82	3990	83	3750	83	3510	84	3280	94	105
0	82	5330	85	4450	86	4180	87	3920	87	3670	96	107	0	80	4970	82	4150	83	3900	84	3650	85	3410	94	105
5	83	5560	86	4640	86	4360	87	4090	88	3830	96	107	5	81	5180	83	4320	84	4060	85	3800	85	3560	94	105
10	84	5830	86	4870	87	4580	88	4290	89	4020	96	107	10	82	5430	84	4530	85	4260	86	3990	86	3740	94	105
15	85	6140	87	5130	88	4810	89	4520	90	4230	96	107	15	83	5700	85	4760	86	4470	87	4190	87	3930	94	105
20	86	6470	88	5410	89	5080	90	4770	90	4460	96	107	20	84	6010	86	5020	87	4720	87	4420	88	4140	94	105
25	87	6850	89	5720	90	5370	91	5050	91	4720	96	107	25	85	6350	87	5300	88	4980	88	4670	89	4380	94	105
30	88	7260	90	6060	91	5690	91	5340	92	5000	96	107	30	86	6720	88	5610	89	5270	89	4940	90	4630	94	105
32	88	7430	91	6200	91	5830	92	5470	92	5120	96	107	32	86	6880	88	5740	89	5390	89	5060	90	4740	94	105

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		HEADWINDS						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1	DIST	V1	DIST	V1	DIST							V1	DIST	V1	DIST	V1	DIST		V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT												
-35	83	4610	83	3600	83	3310	83	3040	83	2780	93 105	-35	84	4600	84	3600	84	3310	84	3040	84	2790	91 103																
-30	82	4590	82	3590	82	3300	82	3030	82	2770	93 104	-30	83	4580	83	3590	83	3300	83	3030	83	2780	91 103																
-25	81	4570	81	3570	81	3280	81	3010	81	2760	92 104	-25	81	4560	81	3570	81	3280	81	3020	81	2770	91 103																
-20	80	4550	80	3560	80	3270	80	3000	80	2750	92 104	-20	80	4530	80	3550	80	3270	80	3000	80	2750	90 102																
-15	79	4530	79	3540	79	3260	80	3050	81	2850	92 104	-15	79	4500	79	3530	79	3250	79	2980	79	2730	90 102																
-10	78	4510	79	3600	80	3370	80	3160	81	2950	92 103	-10	78	4480	78	3510	78	3230	78	2960	79	2750	90 102																
-5	77	4480	79	3720	80	3490	81	3260	82	3050	92 103	-5	77	4440	77	3480	78	3260	78	3050	79	2850	90 102																
0	77	4630	80	3860	81	3620	82	3390	82	3170	92 103	0	76	4410	77	3600	78	3370	79	3160	80	2950	90 101																
5	78	4810	81	4020	81	3770	82	3530	83	3300	92 103	5	75	4480	78	3730	79	3500	80	3280	80	3060	90 101																
10	79	5050	82	4210	82	3950	83	3710	84	3470	92 103	10	77	4680	79	3910	80	3670	81	3430	81	3210	90 101																
15	80	5300	83	4420	83	4150	84	3890	85	3640	92 103	15	78	4910	80	4100	81	3850	81	3600	82	3370	90 101																
20	81	5580	84	4660	84	4370	85	4100	86	3840	92 103	20	79	5170	81	4310	82	4050	82	3790	83	3550	90 101																
25	82	5890	85	4910	85	4610	86	4330	87	4050	92 103	25	80	5450	82	4550	83	4270	83	4000	84	3740	90 101																
30	83	6220	86	5190	86	4880	87	4570	87	4280	92 103	30	81	5750	83	4800	84	4500	84	4220	85	3950	90 101																
32	84	6360	86	5310	87	4990	87	4680	88	4380	92 103	32	81	5880	84	4910	84	4610	85	4320	85	4040	90 101																

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST							
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT				
-35	84	4590	84	3610	84	3330	84	3060	84	2810	89	102	-35	84	4600	84	3630	84	3350	84	3080	84	2830	90	103
-30	83	4570	83	3590	83	3310	83	3040	83	2790	89	102	-30	83	4570	83	3610	83	3330	83	3060	83	2810	89	102
-25	82	4540	82	3570	82	3290	82	3020	82	2780	88	101	-25	82	4540	82	3580	82	3300	82	3040	82	2790	87	101
-20	81	4520	81	3550	81	3270	81	3010	81	2760	88	101	-20	81	4510	81	3560	81	3280	81	3020	81	2770	86	99
-15	79	4480	79	3530	79	3250	79	2980	79	2740	88	101	-15	80	4470	80	3530	80	3250	80	2990	80	2750	86	99
-10	78	4450	78	3500	78	3220	78	2960	78	2720	88	100	-10	79	4440	79	3500	79	3230	79	2970	79	2730	86	99
-5	77	4420	77	3470	77	3200	77	2940	77	2690	88	100	-5	77	4400	77	3470	77	3200	77	2940	77	2700	86	99
0	76	4380	76	3440	76	3170	76	2940	77	2740	88	100	0	76	4360	76	3430	76	3160	76	2910	76	2670	86	98
5	75	4330	75	3470	76	3250	77	3050	78	2850	88	99	5	75	4310	75	3390	75	3120	75	2870	75	2640	86	98
10	74	4340	76	3620	77	3390	78	3170	78	2970	88	99	10	73	4220	74	3360	74	3150	75	2940	76	2750	86	97
15	75	4550	77	3790	78	3550	79	3330	79	3110	88	99	15	72	4200	74	3500	75	3280	76	3070	77	2860	86	97
20	76	4780	78	3980	79	3740	80	3500	80	3270	88	99	20	73	4410	76	3670	76	3440	77	3220	78	3010	86	97
25	77	5030	80	4200	80	3940	81	3690	81	3450	88	99	25	75	4640	77	3860	77	3620	78	3390	79	3170	86	97
30	78	5310	81	4430	81	4150	82	3890	82	3640	88	99	30	76	4890	78	4070	78	3820	79	3570	80	3340	86	97
32	79	5420	81	4520	82	4240	82	3980	83	3720	88	99	32	76	4990	78	4160	79	3900	79	3650	80	3410	86	97

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
12,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP	TAILWIND	ZERO	HEADWINDS			VR V2	TEMP	TAILWIND	ZERO	HEADWINDS			VR V2
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS		DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-35	90 6330	94 5270	95 4950	96 4640	97 4340	106 116	-35	89 6100	93 5080	94 4770	95 4470	96 4180	105 115
-30	90 6670	95 5490	96 5150	97 4830	97 4520	106 116	-30	90 6340	93 5280	94 4960	95 4650	96 4350	105 115
-25	89 7050	95 5710	96 5360	97 5030	98 4710	106 116	-25	90 6630	94 5500	95 5160	96 4840	97 4530	105 115
-20	88 7460	95 5950	96 5590	97 5240	98 4910	106 116	-20	89 7010	94 5730	95 5380	96 5040	97 4720	105 115
-15	87 7890	96 6200	97 5820	98 5460	99 5120	106 116	-15	88 7410	95 5960	96 5600	97 5250	97 4920	105 115
-10	87 8340	96 6460	97 6070	98 5690	99 5340	106 116	-10	87 7840	95 6210	96 5830	97 5470	98 5130	105 115
-5	86 8840	97 6740	98 6330	99 5940	99 5570	106 116	-5	87 8300	96 6480	97 6080	97 5710	98 5350	105 115
0	86 9380	96 7150	98 6610	99 6200	100 5810	106 116	0	86 8810	96 6760	97 6350	98 5960	99 5580	105 115
5	84 10040	95 7690	99 6940	100 6520	101 6110	106 116	5	85 9420	96 7140	98 6660	98 6250	99 5860	105 115
10		95 8330	98 7490	100 6880	101 6450	106 116	10		96 7720	98 7040	99 6600	100 6190	105 115
12		94 8610	98 7750	101 7040	101 6600	106 116	14		95 8260	99 7390	100 6910	100 6470	105 115
14		94 8920	98 8020	101 7200	102 6750	106 116	15		95 8400	99 7520	100 6990	101 6550	105 115
							18		95 8870	98 7940	100 7240	101 6790	105 115

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP	TAILWIND	ZERO	HEADWINDS			VR V2	TEMP	TAILWIND	ZERO	HEADWINDS			VR V2
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS		DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-35	88 5720	91 4770	92 4480	93 4200	94 3930	104 114	-35	85 5370	89 4480	90 4200	91 3940	92 3680	102 112
-30	88 5950	91 4960	92 4650	93 4360	94 4080	104 114	-30	86 5580	89 4650	90 4360	91 4090	92 3830	102 112
-25	89 6190	92 5160	93 4840	94 4540	95 4250	104 114	-25	87 5790	90 4830	91 4540	92 4260	93 3980	102 112
-20	89 6430	92 5370	93 5040	94 4730	95 4430	104 114	-20	87 6020	90 5030	91 4720	92 4430	93 4150	102 112
-15	89 6690	93 5580	94 5240	95 4920	95 4610	104 114	-15	88 6260	91 5230	92 4910	93 4610	93 4310	102 112
-10	89 7030	93 5820	94 5460	95 5120	96 4800	104 114	-10	88 6510	91 5440	92 5110	93 4790	94 4490	102 112
-5	88 7440	94 6060	95 5700	95 5340	96 5000	104 114	-5	89 6770	92 5660	93 5320	93 4990	94 4680	102 112
0	88 7890	94 6310	95 5930	96 5570	97 5220	104 114	0	89 7060	92 5900	93 5540	94 5200	95 4870	102 112
5	87 8330	95 6620	96 6220	97 5840	97 5470	104 114	5	89 7500	93 6180	94 5800	95 5450	95 5110	102 112
10	86 9100	96 6980	96 6560	97 6160	98 5770	104 114	10	88 8080	94 6510	94 6110	95 5740	96 5380	102 112
15	86 9850	96 7380	97 6940	98 6510	99 6100	104 114	15	88 8730	94 6870	95 6460	96 6060	97 5680	102 112
18		96 7730	98 7190	98 6740	99 6320	103 114	20	87 9510	95 7280	96 6840	97 6420	97 6020	102 112
20		96 8020	98 7360	99 6910	99 6470	103 114	22	87 9850	96 7460	96 7010	97 6580	98 6160	102 112
22		96 8330	98 7540	99 7080	100 6630	103 114	25		96 7740	97 7270	98 6820	98 6390	102 112
							26		96 7830	97 7360	98 6910	98 6470	102 112

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP	TAILWIND	ZERO	HEADWINDS			VR V2	TEMP	TAILWIND	ZERO	HEADWINDS			VR V2
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS		DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-35	83 5040	87 4200	88 3940	88 3690	89 3450	100 110	-35	81 4720	84 3930	85 3690	86 3450	87 3230	98 109
-30	84 5230	87 4360	88 4090	89 3830	90 3580	100 110	-30	82 4890	85 4080	86 3830	87 3580	87 3350	98 109
-25	84 5430	88 4530	89 4250	89 3980	90 3730	100 110	-25	82 5080	85 4240	86 3970	87 3720	88 3480	98 109
-20	85 5640	88 4710	89 4420	90 4140	91 3880	100 110	-20	83 5270	86 4400	87 4130	88 3870	88 3620	98 109
-15	86 5850	89 4890	90 4590	90 4310	91 4030	100 110	-15	83 5470	86 4570	87 4290	88 4020	89 3760	98 109
-10	86 6080	89 5080	90 4770	91 4480	92 4190	100 110	-10	84 5680	87 4750	88 4460	89 4180	89 3910	98 109
-5	87 6320	90 5290	91 4970	91 4660	92 4370	100 110	-5	85 5900	87 4930	88 4640	89 4350	90 4070	98 108
0	87 6580	90 5500	91 5170	92 4850	93 4550	100 110	0	85 6140	88 5130	89 4820	90 4530	90 4240	98 108
5	88 6890	91 5760	92 5410	92 5080	93 4760	100 110	5	86 6420	89 5370	89 5040	90 4730	91 4440	98 108
10	89 7250	92 6060	92 5700	93 5350	94 5010	100 110	10	87 6750	89 5640	90 5300	91 4980	92 4660	98 108
15	89 7690	92 6390	93 6010	94 5640	95 5290	100 110	15	88 7110	90 5940	91 5590	92 5250	92 4910	98 108
20	89 8350	93 6770	94 6360	95 5970	95 5590	100 110	20	89 7520	91 6280	92 5910	93 5540	93 5200	98 108
25	88 9100	94 7180	95 6750	96 6330	96 5930	100 110	25	90 7970	92 6660	93 6260	93 5870	94 5510	98 108
26	88 9270	94 7270	95 6830	96 6410	96 6010	100 110	30	90 8620	93 7070	94 6640	94 6230	95 5840	98 108
30	88 9980	95 7630	96 7170	96 6730	97 6310	100 110							

Figure S25-2 (Sheet 25 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
12.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KI/AS										WEIGHT = 13000 LBS										VENR = 160 KI/AS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR KI/AS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR KI/AS																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT		KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT												
-35	81	4630	82	3680	83	3460	84	3230	85	3020	96	107	-35	81	4600	81	3580	81	3290	81	3030	82	2830	94	106														
-30	80	4630	82	3810	83	3580	84	3350	85	3130	96	107	-30	80	4590	80	3580	81	3350	82	3140	82	2930	94	105														
-25	80	4750	83	3960	84	3710	85	3480	85	3250	96	107	-25	79	4580	80	3700	81	3470	82	3250	83	3030	94	105														
-20	81	4930	84	4110	84	3860	85	3610	86	3380	96	107	-20	78	4600	81	3830	82	3600	83	3370	84	3150	94	105														
-15	81	5110	84	4260	85	4000	86	3750	87	3510	96	107	-15	79	4770	82	3980	82	3730	83	3500	84	3270	94	105														
-10	82	5300	85	4430	85	4160	86	3900	87	3650	96	107	-10	79	4940	82	4130	83	3870	84	3630	85	3390	94	105														
-5	82	5500	85	4600	86	4320	87	4050	88	3790	96	107	-5	80	5130	83	4280	84	4020	84	3770	85	3530	94	105														
0	83	5720	86	4780	87	4490	87	4220	88	3950	96	107	0	81	5330	83	4450	84	4180	85	3920	86	3670	94	105														
5	84	5970	86	5000	87	4700	88	4410	89	4130	96	107	5	82	5560	84	4650	85	4370	86	4090	86	3830	94	105														
10	85	6270	87	5250	88	4930	89	4630	89	4340	96	107	10	82	5830	85	4870	86	4580	86	4300	87	4020	94	105														
15	86	6600	88	5530	89	5190	90	4870	90	4560	96	107	15	83	6130	86	5120	87	4820	87	4520	88	4230	94	105														
20	87	6970	89	5830	90	5480	90	5150	91	4820	96	107	20	84	6460	87	5410	87	5080	88	4770	89	4470	94	105														
25	88	7380	90	6170	91	5800	91	5440	92	5100	96	107	25	85	6830	88	5710	88	5370	89	5040	90	4720	94	105														
30	89	7830	91	6540	91	6150	92	5770	93	5410	96	107	30	86	7240	89	6050	89	5690	90	5340	90	5000	94	105														

WEIGHT = 12500 LBS								VENR = 160 KI/AS								WEIGHT = 12000 LBS								VENR = 160 KI/AS							
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2 KI/AS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2 KI/AS								
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS										
	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT			V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT	V1 KI/AS	DIST FT									
-35	81	4570	81	3570	81	3280	81	3010	81	2760	92 104	-35	82	4550	82	3570	82	3280	82	3020	82	2760	91 103								
-30	80	4560	80	3560	80	3270	80	3000	80	2750	92 104	-30	80	4540	80	3560	80	3270	80	3000	80	2750	90 102								
-25	79	4540	79	3550	79	3260	80	3040	80	2840	92 104	-25	79	4520	79	3540	79	3260	79	2990	79	2740	90 102								
-20	78	4530	79	3590	79	3360	80	3150	81	2940	92 103	-20	78	4500	78	3520	78	3240	78	2980	78	2740	90 102								
-15	77	4510	79	3710	80	3480	81	3250	81	3040	92 103	-15	77	4480	77	3510	77	3250	78	3040	79	2840	90 102								
-10	77	4600	80	3840	80	3600	81	3370	82	3150	92 103	-10	76	4460	77	3580	78	3360	79	3150	79	2940	90 101								
-5	78	4770	80	3980	81	3740	82	3500	83	3280	92 103	-5	75	4440	78	3700	78	3470	79	3250	80	3040	90 101								
0	78	4950	81	4140	82	3880	82	3640	83	3410	92 103	0	76	4600	78	3840	79	3600	80	3370	81	3160	90 101								
5	79	5160	82	4320	82	4050	83	3800	84	3560	92 103	5	77	4790	79	4000	80	3760	81	3520	81	3290	90 101								
10	80	5410	83	4520	83	4250	84	3980	85	3730	92 103	10	78	5020	80	4190	81	3940	81	3690	82	3450	90 101								
15	81	5680	83	4750	84	4460	85	4190	85	3920	92 103	15	79	5260	81	4400	82	4130	82	3870	83	3620	90 101								
20	82	5990	84	5010	85	4700	86	4410	86	4130	92 103	20	80	5540	82	4630	83	4350	83	4080	84	3820	90 101								
25	83	6320	85	5290	86	4970	87	4660	87	4360	92 103	25	81	5840	83	4880	84	4590	84	4300	85	4030	90 101								
30	84	6690	86	5600	87	5250	87	4930	88	4620	92 103	30	82	6170	84	5160	84	4850	85	4550	85	4260	90 101								

WEIGHT = 11500 LBS								VENR = 160 KI/AS								WEIGHT = 11000 LBS								VENR = 160 KI/AS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						VR V2 KI/AS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						VR V2 KI/AS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
					V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT							V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT	V1 DIST KI/AS FT									
-35	82	4540	82	3570	82	3290	82	3020	82	2780	88	101	-35	82	4540	82	3580	82	3300	82	3040	82	2790	87	101						
-30	81	4520	81	3560	81	3270	81	3010	81	2760	88	101	-30	81	4520	81	3560	81	3290	81	3020	81	2780	86	99						
-25	80	4500	80	3540	80	3260	80	2990	80	2750	88	101	-25	80	4490	80	3540	80	3260	80	3000	80	2760	86	99						
-20	79	4470	79	3520	79	3240	79	2980	79	2730	88	100	-20	79	4460	79	3520	79	3240	79	2980	79	2740	86	99						
-15	77	4450	77	3500	77	3220	77	2960	77	2710	88	100	-15	78	4430	78	3500	78	3220	78	2960	78	2720	86	99						
-10	76	4430	76	3480	76	3200	76	2940	77	2730	88	100	-10	77	4400	77	3470	77	3200	77	2940	77	2700	86	98						
-5	75	4400	75	3460	76	3230	77	3030	77	2830	88	100	-5	75	4370	75	3450	75	3180	75	2920	75	2680	86	98						
0	74	4370	76	3570	76	3350	77	3130	78	2920	88	99	0	74	4340	74	3420	74	3150	74	2900	75	2710	86	98						
5	74	4440	76	3700	77	3470	78	3250	78	3040	88	99	5	73	4280	74	3430	74	3220	75	3010	76	2820	86	97						
10	75	4640	77	3880	78	3640	79	3410	79	3190	88	99	10	72	4290	74	3570	75	3350	76	3140	76	2930	86	97						
15	76	4870	78	4060	79	3810	80	3570	80	3340	88	99	15	73	4490	75	3740	76	3510	77	3290	77	3070	86	97						
20	77	5120	79	4270	80	4010	81	3760	81	3520	88	99	20	74	4720	77	3930	77	3690	78	3460	78	3230	86	97						
25	78	5390	80	4500	81	4230	82	3960	82	3710	88	99	25	76	4960	78	4140	78	3890	79	3640	79	3400	86	97						
30	79	5690	81	4750	82	4460	82	4180	83	3910	88	99	30	77	5230	79	4370	79	4100	80	3840	80	3590	86	97						

Figure S25-2 (Sheet 26 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
13.000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT		KIAS	FT	KIAS		KIAS	FT		KIAS	FT	KIAS
-35	89	7140	95	5790	96	5440	97	5100	98	4780	106	116	105
-30	88	7550	95	6030	96	5660	97	5310	98	4980	106	116	105
-25	87	7990	95	6280	97	5900	98	5540	99	5190	106	116	105
-20	86	8450	95	6550	97	6150	98	5770	99	5410	106	116	105
-15	86	8940	96	6830	97	6410	98	6020	99	5640	106	116	105
-10	85	9470	96	7220	98	6690	99	6280	100	5880	106	116	105
-5	84	10040	95	7700	98	6990	99	6560	100	6150	106	116	105
0			94	8220	98	7410	100	6850	100	6420	106	116	105
5			94	8870	97	8010	100	7220	101	6770	106	116	105
6			93	9020	97	8140	100	7300	101	6840	106	116	105
9			93	9460	97	8540	100	7630	101	7070	106	116	105

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT		KIAS	FT	KIAS		KIAS	FT		KIAS	FT	KIAS
-35	88	6270	92	5230	93	4910	94	4600	95	4310	104	114	102
-30	89	6520	92	5440	93	5110	94	4790	95	4490	104	114	102
-25	89	6780	93	5660	94	5320	95	4990	95	4670	104	114	102
-20	89	7120	93	5900	94	5540	95	5200	96	4870	104	114	102
-15	88	7540	93	6130	94	5770	95	5410	96	5070	104	114	102
-10	88	7970	94	6390	95	6010	96	5640	96	5290	104	114	102
-5	87	8450	94	6660	95	6260	96	5880	97	5510	104	114	102
0	86	8960	95	6950	96	6540	97	6140	97	5750	104	114	102
5	85	9630	95	7310	96	6870	97	6450	98	6050	104	114	102
10			95	7810	97	7240	98	6800	99	6370	104	114	102
13			95	8210	97	7490	98	7030	99	6590	103	114	102
15			95	8510	98	7670	98	7200	99	6750	103	114	102
17			94	8830	98	7860	99	7370	99	6910	103	114	102

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS		
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS
	KIAS	FT		KIAS	FT	KIAS		KIAS	FT		KIAS	FT	KIAS
-35	84	5500	88	4590	89	4310	89	4040	90	3780	100	110	98
-30	85	5710	88	4770	89	4480	90	4200	91	3930	100	110	98
-25	85	5940	89	4960	89	4660	90	4370	91	4090	100	110	98
-20	86	6170	89	5150	90	4840	91	4540	92	4250	100	110	98
-15	86	6410	89	5360	90	5030	91	4720	92	4430	100	110	98
-10	87	6660	90	5570	91	5240	92	4920	92	4610	100	110	98
-5	87	6930	90	5800	91	5450	92	5120	93	4800	100	110	98
0	88	7220	91	6040	92	5680	93	5330	93	5000	100	110	98
5	89	7580	92	6340	92	5960	93	5600	94	5250	100	110	98
10	88	8120	92	6660	93	6270	94	5880	94	5520	100	110	98
15	88	8790	93	7040	94	6620	95	6210	95	5830	100	110	98
20	87	9570	94	7460	95	7010	95	6590	96	6180	100	110	98
21	87	9750	94	7550	95	7100	95	6660	96	6250	100	110	98
25			95	7930	95	7450	96	7000	97	6560	100	110	98

Figure S25-2 (Sheet 27 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
13.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS											VENR = 160 KIAS											WEIGHT = 13000 LBS											VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																				
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS																								
	V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																							
-35	80	4820	83	4010	84	3770	85	3530	85	3300	96	107	-35	79	4660	80	3750	81	3520	82	3290	83	3080	94	105																		
-30	80	4990	83	4170	84	3910	85	3660	86	3430	96	107	-30	78	4660	81	3890	82	3650	83	3410	83	3190	94	105																		
-25	81	5180	84	4330	85	4060	86	3810	86	3560	96	107	-25	79	4840	82	4030	82	3780	83	3550	84	3320	94	105																		
-20	82	5380	84	4490	85	4220	86	3950	87	3700	96	107	-20	79	5010	82	4180	83	3930	84	3680	84	3440	94	105																		
-15	82	5580	85	4660	86	4380	87	4110	87	3850	96	107	-15	80	5200	83	4340	83	4080	84	3820	85	3580	94	105																		
-10	83	5790	86	4840	86	4550	87	4270	88	4000	96	107	-10	80	5390	83	4510	84	4230	85	3970	85	3720	94	105																		
-5	83	6020	86	5030	87	4730	88	4440	88	4160	96	107	-5	81	5600	84	4680	84	4400	85	4130	86	3870	94	105																		
0	84	6260	87	5240	87	4920	88	4620	89	4330	96	107	0	82	5820	84	4870	85	4570	86	4290	86	4020	94	105																		
5	85	6550	87	5480	88	5160	89	4840	89	4540	96	107	5	82	6080	85	5090	86	4790	86	4490	87	4210	94	105																		
10	85	6870	88	5750	89	5410	89	5080	90	4760	96	107	10	83	6380	86	5340	86	5020	87	4710	88	4410	94	105																		
15	86	7240	89	6060	90	5700	90	5350	91	5020	96	107	15	84	6710	87	5620	87	5280	88	4960	89	4650	94	105																		
20	87	7660	90	6410	90	6030	91	5660	92	5310	96	107	20	85	7090	87	5930	88	5580	89	5240	89	4910	94	105																		
25	88	8110	91	6790	91	6380	92	5990	92	5620	96	107	25	86	7500	88	6280	89	5900	90	5540	90	5200	94	105																		
28	89	8410	91	7040	92	6620	92	6210	93	5830	96	107	28	87	7770	89	6500	89	6110	90	5740	91	5380	94	105																		

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS						10 KTS	20 KTS	30 KTS																							
	V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT				V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT																						
-35	79	4620	79	3610	79	3320	80	3080	80	2880	92 104	-35	79	4600	79	3600	79	3310	79	3040	79	2790	90 102																
-30	78	4610	78	3630	79	3410	80	3190	81	2980	92 103	-30	78	4590	78	3590	78	3310	78	3030	78	2780	90 102																
-25	77	4600	79	3760	80	3530	81	3300	81	3090	92 103	-25	77	4570	77	3580	77	3290	78	3080	79	2880	90 102																
-20	77	4670	80	3890	80	3650	81	3420	82	3200	92 103	-20	76	4550	77	3630	78	3410	79	3190	79	2980	90 101																
-15	77	4840	80	4040	81	3790	82	3550	82	3320	92 103	-15	75	4540	77	3750	78	3520	79	3300	80	3080	90 101																
-10	78	5010	81	4190	81	3930	82	3690	83	3450	92 103	-10	75	4660	78	3890	79	3650	80	3420	80	3200	90 101																
-5	79	5200	81	4350	82	4090	83	3830	83	3590	92 103	-5	76	4830	79	4030	79	3790	80	3550	81	3320	90 101																
0	79	5400	82	4520	83	4250	83	3980	84	3730	92 103	0	77	5010	79	4190	80	3930	81	3690	81	3450	90 101																
5	80	5650	83	4720	83	4440	84	4170	85	3900	92 103	5	78	5230	80	4380	81	4110	81	3850	82	3610	90 101																
10	81	5910	83	4950	84	4650	85	4360	85	4090	92 103	10	79	5470	81	4580	82	4300	82	4030	83	3780	90 101																
15	82	6210	84	5200	85	4890	86	4590	86	4300	92 103	15	80	5750	82	4810	82	4520	83	4240	84	3970	90 101																
20	83	6550	85	5490	86	5160	86	4840	87	4540	92 103	20	81	6060	83	5070	83	4760	84	4470	85	4190	90 101																
25	84	6930	86	5800	87	5450	87	5120	88	4800	92 103	25	82	6390	84	5350	84	5030	85	4720	85	4420	90 101																
28	85	7170	87	6000	87	5640	88	5300	88	4970	92 103	28	82	6610	84	5530	85	5200	85	4880	86	4570	90 101																

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR KIAS	V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR KIAS	V2 KIAS						
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS							10 KTS	20 KTS	30 KTS														
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST														
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT				KIAS FT	KIAS FT	KIAS FT	KIAS FT														
-35	80	4580	80	3600	80	3310	80	3050	80	2800	88	101	-35	80	4570	80	3600	80	3320	80	3060	80	2810	86	99						
-30	79	4560	79	3590	79	3300	79	3040	79	2790	88	100	-30	79	4550	79	3590	79	3310	79	3040	79	2800	86	99						
-25	78	4540	78	3570	78	3290	78	3020	78	2770	88	100	-25	78	4530	78	3570	78	3290	78	3030	78	2780	86	99						
-20	77	4520	77	3560	77	3270	77	3010	77	2770	88	100	-20	77	4500	77	3550	77	3270	77	3010	77	2760	86	98						
-15	75	4510	75	3540	76	3280	76	3070	77	2870	88	100	-15	76	4480	76	3530	76	3260	76	2990	76	2750	86	98						
-10	74	4490	75	3620	76	3390	77	3180	78	2970	88	99	-10	75	4460	75	3510	75	3240	75	2980	75	2750	86	98						
-5	73	4480	76	3740	77	3510	77	3290	78	3070	88	99	-5	74	4430	74	3490	74	3250	75	3050	75	2850	86	98						
0	74	4640	77	3870	77	3640	78	3410	79	3190	88	99	0	72	4400	74	3590	74	3370	75	3150	76	2940	86	97						
5	75	4840	77	4040	78	3800	79	3560	79	3330	88	99	5	72	4470	75	3730	75	3500	76	3280	77	3060	86	97						
10	76	5060	78	4230	79	3970	80	3720	80	3480	88	99	10	73	4660	75	3890	76	3650	77	3420	77	3200	86	97						
15	77	5310	79	4440	80	4170	80	3910	81	3660	88	99	15	74	4890	76	4080	77	3830	78	3590	78	3360	86	97						
20	78	5590	80	4670	81	4390	81	4120	82	3850	88	99	20	75	5140	77	4290	78	4030	79	3780	79	3540	86	97						
25	79	5890	81	4930	82	4630	82	4340	83	4070	88	99	25	76	5410	78	4520	79	4250	80	3980	80	3730	86	97						
28	80	6090	82	5090	82	4780	83	4490	83	4200	88	99	28	77	5590	79	4670	80	4390	80	4110	81	3850	86	97						

Figure S25-2 (Sheet 28 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
14.000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEEDBRAKES - RETRACT
LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST
SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KI/AS										WEIGHT = 16000 LBS										VENR = 160 KI/AS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						VR	V2 KI/AS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KI/AS FT		ZERO WIND V1 DIST KI/AS FT		H E A D W I N D S						VR	V2 KI/AS														
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																	
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																
	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT				KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT			KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT	KI/AS FT									
-35	87	8120	96	6390	97	6000	98	5630	99	5280	106	116	-35	88	7630	95	6150	96	5770	97	5420	97	5070	105	115														
-30	86	8590	96	6660	97	6260	98	5870	99	5500	106	116	-30	87	8060	95	6400	96	6020	97	5640	98	5290	105	115														
-25	86	9090	96	6950	97	6530	98	6120	99	5740	106	116	-25	87	8540	95	6670	96	6270	97	5880	98	5520	105	115														
-20	85	9620	96	7350	98	6810	99	6390	100	5990	106	116	-20	86	9030	96	6960	97	6540	98	6130	98	5750	105	115														
-15	84	10180	95	7820	98	7100	99	6660	100	6250	106	116	-15	85	9570	96	7270	97	6810	98	6400	99	6000	105	115														
-10			94	8330	98	7510	99	6960	100	6520	106	116	-10	84	10140	95	7740	97	7110	98	6680	99	6260	105	115														
-5			93	8890	97	8040	100	7270	101	6820	106	116	-5			94	8260	98	7430	99	6980	99	6540	105	115														
0			93	9520	96	8630	100	7720	101	7150	106	116	0			93	8850	97	7980	99	7310	100	6850	105	115														
3			92	9970	96	9030	99	8090	101	7370	106	116	3			93	9250	96	8350	99	7530	100	7060	105	115														
													5			93	9540	96	8610	100	7690	100	7210	105	115														
													8			92	10000	96	9040	99	8070	101	7430	105	115														

WEIGHT = 15500 LBS											VENR = 160 KI/AS											WEIGHT = 15000 LBS											VENR = 160 KI/AS											
TEMP DEG C	TAILWIND			ZERO			H E A D W I N D S								TEMP DEG C	TAILWIND			ZERO			H E A D W I N D S								TEMP DEG C	TAILWIND			ZERO			H E A D W I N D S							
	10 KTS			WIND			10 KTS		20 KTS		30 KTS		10 KTS			WIND			10 KTS		20 KTS		30 KTS		10 KTS			WIND			10 KTS		20 KTS		30 KTS									
	V1	DIST		V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	VR	V2				
	KI/AS	FT		KI/AS	FT		KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	KI/AS	FT	VR	V2				
-35	89	6900		93	5760		94	5410		95	5070		95	4750		104	114	-35	87	6460		91	5390		92	5060		92	4750		93	4450		102	112									
-30	89	7240		93	6000		94	5630		95	5280		96	4950		104	114	-30	88	6710		91	5610		92	5270		93	4940		94	4630		102	112									
-25	88	7660		93	6240		94	5870		95	5510		96	5160		104	114	-25	88	6980		91	5840		92	5480		93	5150		94	4820		102	112									
-20	87	8100		94	6500		95	6110		96	5740		96	5380		104	114	-20	89	7260		92	6080		93	5710		94	5360		94	5020		102	112									
-15	87	8580		94	6770		95	6360		96	5980		97	5610		104	114	-15	88	7640		92	6320		93	5950		94	5580		95	5230		102	112									
-10	86	9090		95	7060		96	6640		96	6230		97	5840		104	114	-10	88	8100		93	6580		94	6190		94	5810		95	5450		102	112									
-5	85	9650		95	7370		96	6930		97	6500		98	6100		104	114	-5	87	8590		93	6860		94	6450		95	6060		96	5690		102	112									
0	84	10280		95	7770		96	7250		97	6800		98	6380		104	114	0	86	9140		94	7170		94	6750		95	6340		96	5940		102	112									
5				94	8380		97	7610		98	7150		98	6710		104	114	5	85	9800		94	7530		95	7080		96	6650		97	6240		102	112									
8				94	8770		97	7850		98	7370		99	6910		103	114	10				95	7920		96	7450		96	7000		97	6560		102	112									
10				94	9060		97	8110		98	7530		99	7060		103	114	12				95	8140		96	7620		97	7160		97	6720		102	112									
12				93	9390		97	8400		99	7710		99	7230		103	114	15				95	8590		96	7900		97	7420		98	6960		102	112									
																		17				94	8910		97	8090		97	7600		98	7130		102	112									

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	VZ	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	VZ
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS			
					V1	DIST	V1	DIST	V1	DIST								V1	DIST	V1	DIST	V1	DIST		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	85	6040	89	5040	89	4740	90	4440	91	4160	100	110	-35	83	5640	86	4710	87	4430	88	4150	89	3880	98	109
-30	86	6280	89	5240	90	4930	91	4620	91	4330	100	110	-30	84	5860	87	4900	88	4600	88	4310	89	4040	98	109
-25	86	6520	89	5450	90	5120	91	4810	92	4500	100	110	-25	84	6090	87	5090	88	4780	89	4490	90	4200	98	108
-20	87	6780	90	5670	91	5330	92	5000	92	4690	100	110	-20	85	6320	88	5290	89	4970	89	4660	90	4370	98	108
-15	87	7050	90	5900	91	5540	92	5200	93	4880	100	110	-15	85	6570	88	5500	89	5170	90	4850	90	4550	98	108
-10	88	7330	91	6140	92	5770	92	5420	93	5080	100	110	-10	86	6830	89	5720	89	5370	90	5050	91	4730	98	108
-5	88	7640	91	6390	92	6010	93	5650	93	5300	100	110	-5	86	7100	89	5950	90	5600	91	5250	91	4930	98	108
0	88	8090	92	6670	92	6280	93	5900	94	5530	100	110	0	87	7410	90	6210	90	5840	91	5480	92	5140	98	108
5	87	8650	92	7000	93	6580	94	6180	94	5800	100	110	5	88	7760	90	6500	91	6120	92	5750	92	5390	98	108
10	87	9290	93	7350	94	6920	94	6500	95	6100	100	110	10	88	8150	91	6820	92	6420	92	6030	93	5660	98	108
15	86	10100	94	7790	94	7320	95	6880	96	6450	100	110	15	88	8810	92	7210	92	6790	93	6370	94	5980	98	108
17	86	10460	94	7970	95	7500	95	7040	96	6610	100	110	20	87	9600	92	7650	93	7190	94	6750	94	6340	98	108
20			95	8260	95	7770	96	7300	96	6850	100	110	21	87	9760	93	7740	93	7280	94	6840	94	6410	98	108
21			95	8370	95	7860	96	7390	97	6930	100	110	25	87	10520	93	8130	94	7640	94	7180	95	6740	98	108

Figure S25-2 (Sheet 29 of 30)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 7°
14,000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
VENR = 160 KIAS								VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR KIAS								
	10 KTS				10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS									
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-35	81	5270	84	4400	85	4130	86	3870	86	3620	96	107	-35	79	4920	82	4100	82	3850	83	3610	84	3370	94	105
-30	82	5470	84	4570	85	4290	86	4020	87	3760	96	107	-30	79	5100	82	4260	83	4000	84	3750	84	3500	94	105
-25	82	5680	85	4750	86	4460	87	4180	87	3910	96	107	-25	80	5290	83	4420	83	4150	84	3890	85	3640	94	105
-20	83	5890	85	4930	86	4630	87	4340	88	4070	96	107	-20	80	5490	83	4590	84	4310	85	4040	85	3780	94	105
-15	83	6120	86	5120	87	4810	87	4510	88	4230	96	107	-15	81	5690	84	4760	84	4470	85	4200	86	3930	94	105
-10	84	6350	86	5320	87	5000	88	4690	89	4400	96	107	-10	81	5910	84	4950	85	4650	86	4360	86	4090	94	105
-5	84	6610	87	5530	88	5200	88	4890	89	4580	96	107	-5	82	6140	85	5140	85	4830	86	4540	87	4250	94	105
0	85	6880	87	5770	88	5420	89	5090	90	4780	96	107	0	83	6390	85	5350	86	5030	87	4730	87	4430	94	105
5	85	7200	88	6040	89	5680	89	5330	90	5000	96	107	5	83	6680	86	5600	87	5260	87	4940	88	4640	94	105
10	86	7550	89	6330	89	5950	90	5590	91	5240	96	107	10	84	6990	86	5860	87	5510	88	5180	88	4860	94	105
15	87	7970	90	6680	90	6280	91	5900	91	5540	96	107	15	85	7380	87	6180	88	5820	89	5470	89	5120	94	105
20	88	8440	90	7070	91	6650	92	6250	92	5860	96	107	20	86	7800	88	6540	89	6150	89	5780	90	5420	94	105
25	89	9020	91	7510	92	7060	92	6630	93	6220	96	107	25	87	8270	89	6930	90	6520	90	6120	91	5740	94	105
26	89	9190	91	7600	92	7150	93	6710	93	6300	96	107	26	87	8370	89	7010	90	6600	90	6200	91	5810	94	105

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-35	77	4690	79	3830	80	3590	81	3360	81	3140	92	103	-35	77	4660	77	3650	77	3360	78	3140	79	2930	90	102														
-30	77	4750	79	3960	80	3720	81	3480	82	3260	92	103	-30	76	4650	77	3700	78	3470	78	3250	79	3040	90	101														
-25	77	4920	80	4110	81	3860	82	3620	82	3380	92	103	-25	75	4640	77	3820	78	3590	79	3360	80	3140	90	101														
-20	78	5100	81	4260	81	4000	82	3750	83	3510	92	103	-20	75	4740	78	3960	79	3710	79	3480	80	3250	90	101														
-15	78	5290	81	4420	82	4150	83	3900	83	3650	92	103	-15	76	4910	78	4100	79	3850	80	3610	81	3380	90	101														
-10	79	5490	82	4590	82	4310	83	4050	84	3790	92	103	-10	77	5090	79	4260	80	4000	81	3750	81	3510	90	101														
-5	80	5700	82	4770	83	4480	84	4210	84	3940	92	103	-5	77	5280	80	4420	80	4150	81	3890	82	3640	90	101														
0	80	5930	83	4960	83	4670	84	4380	85	4100	92	103	0	78	5490	80	4600	81	4320	82	4050	82	3790	90	101														
5	81	6190	83	5180	84	4880	85	4580	85	4290	92	103	5	79	5730	81	4800	82	4510	82	4230	83	3960	90	101														
10	82	6470	84	5420	85	5100	85	4790	86	4490	92	103	10	79	5980	82	5010	82	4710	83	4420	84	4150	90	101														
15	83	6820	85	5720	86	5380	86	5050	87	4730	92	103	15	80	6300	83	5280	83	4960	84	4660	84	4370	90	101														
20	84	7200	86	6030	86	5680	87	5340	88	5000	92	103	20	81	6640	83	5570	84	5230	85	4910	85	4610	90	101														
25	85	7620	87	6390	87	6010	88	5640	88	5300	92	103	25	82	7020	84	5890	85	5540	85	5200	86	4870	90	101														
26	85	7710	87	6460	87	6080	88	5710	88	5360	92	103	26	83	7100	84	5950	85	5600	86	5260	86	4930	90	101														

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS								
	10 KTS				10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS				10 KTS	20 KTS	30 KTS												
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST												
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT												
-35	78	4630	78	3640	78	3350	78	3080	78	2830	88	100	-35	78	4610	78	3640	78	3350	78	3090	78	2830	86	99						
-30	77	4620	77	3630	77	3340	77	3070	77	2820	88	100	-30	77	4600	77	3630	77	3340	77	3070	77	2820	86	98						
-25	76	4600	76	3620	76	3340	76	3130	77	2920	88	100	-25	76	4580	76	3610	76	3330	76	3060	76	2810	86	98						
-20	75	4590	75	3680	76	3450	77	3240	77	3020	88	99	-20	75	4560	75	3600	75	3310	75	3050	75	2800	86	98						
-15	74	4580	76	3810	77	3570	77	3340	78	3130	88	99	-15	74	4550	74	3580	74	3310	75	3100	75	2900	86	98						
-10	74	4720	76	3940	77	3700	78	3460	78	3240	88	99	-10	73	4530	74	3650	74	3420	75	3210	76	3000	86	97						
-5	75	4890	77	4090	78	3840	78	3600	79	3360	88	99	-5	72	4520	74	3770	75	3540	76	3320	76	3100	86	97						
0	75	5080	78	4250	78	3990	79	3740	80	3500	88	99	0	72	4690	75	3910	75	3670	76	3440	77	3220	86	97						
5	76	5290	78	4430	79	4160	80	3900	80	3650	88	99	5	73	4880	76	4080	76	3830	77	3590	77	3360	86	97						
10	77	5520	79	4630	80	4350	80	4080	81	3820	88	99	10	74	5090	76	4250	77	4000	78	3750	78	3510	86	97						
15	78	5810	80	4860	81	4570	81	4290	82	4020	88	99	15	75	5340	77	4470	78	4200	78	3940	79	3690	86	97						
20	79	6120	81	5120	82	4820	82	4520	83	4240	88	99	20	76	5620	78	4700	79	4420	79	4150	80	3880	86	97						
25	80	6460	82	5410	82	5090	83	4780	83	4480	88	99	25	77	5930	79	4960	80	4660	80	4380	81	4100	86	97						
26	80	6530	82	5470	83	5150	83	4830	84	4530	88	99	26	77	5990	79	5020	80	4720	80	4420	81	4140	86	97						

Figure S25-2 (Sheet 30 of 30)



TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 15°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure S25-4 and correct for runway gradient and anti-icing requirements using the tables below.

If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 15°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

CORRECTION FACTORS - RUNWAY GRADIENT				
RUNWAY GRADIENT	SHADED AREA		NONSHADED AREA	
	V_1 *	MULTIPLY DISTANCE BY	V_1 *	MULTIPLY DISTANCE BY
2% UPHILL	ADD 4 KNOTS	1.7 * *	ADD 4 KNOTS	1.7 * *
1% UPHILL	ADD 2 KNOTS	1.2	ADD 2 KNOTS	1.2
1% DOWNHILL	SUBTRACT 4 KNOTS	1.0	ADD 1 KNOT	1.07
2% DOWNHILL	SUBTRACT 6 KNOTS	1.0	ADD 1 KNOT	1.12

CORRECTION FACTORS - ANTI-ICE ON	
V_1 - KIAS	NO CORRECTION
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.15

* If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .

* * Takeoffs prohibited for corrected takeoff field lengths greater than 11,000 feet.

NOTE: Downhill takeoff with a tailwind and a gross weight of 15,500 pounds or greater is prohibited.

EXAMPLE:

Ambient Temperature = 5°C
Pressure Altitude = 7000 FEET
Gross Weight = 16,300 POUNDS

Wind = 30 KNOTS (HEADWIND)
Runway Gradient = 0%
Anti-Ice Systems = OFF

From Figure S25-4, the Takeoff Field Length is 3880.

V_1 is 92 KNOTS
 V_R is 102 KNOTS
 V_2 is 112 KNOTS
 V_{ENR} is 160 KNOTS

Figure S25-3

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								VR	V2 KIAS										
					10 KTS V1 DIST KIAS FT		20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT									20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT																	
-25	87	3900	88	3000	89	2790	90	2590	91	2390	102	112	-25	87	3890	87	2960	87	2700	88	2500	89	2310	101	111														
-20	87	3970	88	3050	89	2840	90	2640	90	2440	102	112	-20	87	3970	87	3020	87	2750	88	2550	89	2360	101	111														
-15	87	4050	88	3110	89	2900	90	2690	90	2490	102	112	-15	87	4040	87	3070	87	2800	88	2600	89	2410	101	111														
-10	87	4120	88	3170	89	2950	89	2740	90	2540	102	112	-10	87	4110	87	3130	87	2850	88	2650	89	2460	101	111														
-5	87	4190	87	3220	88	3000	89	2790	90	2590	102	112	-5	87	4190	87	3190	87	2900	88	2700	89	2500	101	111														
0	87	4260	87	3280	88	3060	89	2850	90	2640	102	112	0	87	4250	87	3240	87	2960	88	2750	89	2550	101	111														
5	87	4330	87	3340	88	3120	89	2900	90	2690	102	112	5	87	4320	87	3300	87	3010	88	2800	89	2600	101	111														
10	87	4410	87	3400	88	3170	89	2950	90	2740	102	112	10	87	4400	87	3350	87	3060	88	2860	89	2650	101	111														
15	87	4480	87	3460	88	3230	89	3010	90	2790	102	112	15	87	4470	87	3410	87	3120	88	2910	89	2700	101	111														
20	86	4510	87	3540	88	3310	89	3080	90	2860	102	112	20	86	4500	86	3430	87	3200	88	2980	89	2770	101	111														
25	86	4530	88	3630	89	3390	90	3160	91	2940	102	112	25	86	4520	86	3510	87	3280	88	3050	89	2840	101	111														
30	86	4620	89	3800	90	3550	91	3310	92	3080	102	112	30	84	4460	88	3670	89	3430	89	3190	90	2970	101	111														
35	87	4870	90	4010	91	3740	92	3490	93	3250	102	112	35	86	4700	89	3870	90	3610	91	3370	92	3130	101	111														
40	89	5150	92	4240	92	3960	93	3690	94	3430	102	112	40	87	4970	90	4090	91	3820	92	3560	93	3310	101	111														
45	90	5480	93	4500	94	4200	95	3920	95	3640	102	112	45	89	5280	92	4340	93	4050	93	3780	94	3510	101	111														
50	92	5830	94	4790	95	4470	96	4170	96	3880	102	112	50	90	5620	93	4620	94	4310	95	4020	95	3730	101	111														
52	92	5980	95	4910	96	4580	96	4270	97	3970	102	112	54	92	5910	94	4850	95	4530	95	4220	96	3920	101	111														
54	93	6130	95	5030	96	4700	97	4380	97	4070	102	112																											

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR	V2 KIAS														
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																	
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																
-25	88	3890	88	2960	88	2700	88	2450	88	2220	99	110	-25	88	3890	88	2970	88	2710	88	2460	88	2240	98	108														
-20	88	3960	88	3020	88	2750	88	2500	88	2270	99	110	-20	88	3960	88	3030	88	2760	88	2510	88	2280	98	108														
-15	87	4030	87	3080	87	2800	87	2550	87	2310	99	110	-15	88	4030	88	3080	88	2810	88	2560	88	2330	98	108														
-10	87	4100	87	3130	87	2860	87	2600	87	2360	99	110	-10	88	4100	88	3140	88	2870	88	2610	88	2370	98	108														
-5	87	4180	87	3190	87	2910	87	2650	87	2400	99	110	-5	88	4170	88	3200	88	2920	88	2660	88	2420	98	108														
0	87	4240	87	3240	87	2960	87	2690	87	2450	99	110	0	87	4240	87	3250	87	2970	87	2700	87	2460	98	108														
5	87	4310	87	3300	87	3010	87	2740	87	2490	99	110	5	87	4310	87	3300	87	3020	87	2750	87	2500	98	108														
10	87	4380	87	3350	87	3060	87	2790	87	2540	99	110	10	87	4380	87	3360	87	3070	87	2800	87	2550	98	108														
15	87	4460	87	3410	87	3110	87	2840	87	2580	99	110	15	87	4450	87	3410	87	3120	87	2850	87	2590	98	108														
20	86	4480	86	3430	86	3130	86	2850	87	2610	99	110	20	87	4470	87	3430	87	3140	87	2860	87	2610	98	108														
25	86	4500	86	3450	86	3150	86	2880	87	2680	99	110	25	86	4490	86	3450	86	3150	86	2880	86	2620	98	108														
30	84	4390	85	3460	86	3230	87	3010	88	2800	99	110	30	84	4370	84	3360	84	3070	85	2840	86	2640	98	108														
35	84	4440	87	3650	88	3400	89	3170	89	2950	99	110	35	82	4230	84	3440	85	3210	86	2990	87	2770	98	108														
40	85	4690	88	3850	89	3600	90	3350	91	3120	99	110	40	83	4410	86	3630	87	3380	88	3150	88	2930	98	108														
45	87	4970	90	4090	90	3810	91	3550	92	3300	99	110	45	85	4670	87	3840	88	3580	89	3340	90	3100	97	108														
50	88	5280	91	4340	92	4050	92	3770	93	3510	99	110	50	86	4960	89	4080	90	3800	90	3540	91	3290	97	108														
54	90	5550	92	4560	93	4250	93	3960	94	3680	99	109	54	87	5210	90	4280	91	3990	91	3720	92	3450	97	108														

WEIGHT = 14500 LBS										VENR = 160 KIAS										WEIGHT = 14000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	VZ	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	VZ														
	10 KTS				10 KTS		20 KTS		30 KTS					10 KTS				10 KTS		20 KTS		30 KTS																	
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT				V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT																
-25	88	3890	88	2990	88	2730	88	2480	88	2250	96	107	-25	88	3910	88	3010	88	2750	88	2500	88	2280	94	106														
-20	88	3960	88	3040	88	2780	88	2530	88	2300	96	107	-20	88	3980	88	3060	88	2800	88	2550	88	2320	94	106														
-15	88	4030	88	3100	88	2830	88	2580	88	2340	96	107	-15	88	4050	88	3120	88	2850	88	2600	88	2370	94	106														
-10	88	4110	88	3150	88	2880	88	2630	88	2390	96	107	-10	88	4120	88	3170	88	2900	88	2650	88	2410	94	106														
-5	88	4170	88	3210	88	2930	88	2680	88	2430	96	107	-5	88	4190	88	3230	88	2950	88	2700	88	2460	94	106														
0	88	4240	88	3260	88	2980	88	2720	88	2480	96	107	0	88	4250	88	3280	88	3000	88	2740	88	2500	94	106														
5	88	4310	88	3310	88	3030	88	2770	88	2520	96	107	5	88	4320	88	3330	88	3050	88	2790	88	2540	94	106														
10	88	4380	88	3370	88	3080	88	2810	88	2560	96	107	10	88	4380	88	3390	88	3100	88	2830	88	2590	94	106														
15	87	4450	87	3420	87	3130	87	2860	87	2610	96	107	15	88	4450	88	3440	88	3150	88	2880	88	2630	94	106														
20	87	4470	87	3440	87	3150	87	2870	87	2620	96	107	20	87	4470	87	3450	87	3160	87	2890	87	2640	94	106														
25	86	4480	86	3450	86	3160	86	2890	86	2630	96	107	25	87	4490	87	3470	87	3180	87	2900	87	2650	94	106														
30	85	4360	85	3360	85	3070	85	2810	85	2560	96	106	30	85	4360	85	3370	85	3080	85	2820	85	2570	94	105														
35	82	4210	82	3240	83	3020	84	2810	85	2610	96	106	35	82	4200	82	3240	82	2970	82	2710	82	2470	94	105														
40	81	4150	84	3410	84	3180	85	2960	86	2750	96	106	40	80	4050	81	3200	82	2990	83	2780	83	2580	94	105														
45	82	4390	85	3610	86	3370	87	3130	87	2910	96	106	45	80	4130	83	3380	83	3160	84	2940	85	2730	94	105														
50	84	4660	87	3820	87	3570	88	3320	89	3090	96	106	50	82	4370	84	3590	85	3340	86	3110	86	2890	94	105														
54	85	4880	88	4010	88	3740	89	3480	90	3230	96	106	54	83	4580	85	3760	86	3500	87	3260	87	3030	94	104														

Figure S25-4 (Sheet 1 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
SEA LEVELCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-25	89 3930	89 3040	89 2780	89 2530	89 2310	92 105	-25	89 3960	89 3070	89 2810	89 2570	89 2340	91 103
-20	89 4000	89 3090	89 2830	89 2580	89 2350	92 105	-20	89 4030	89 3130	89 2860	89 2620	89 2390	91 103
-15	88 4070	88 3150	88 2880	88 2630	88 2400	92 105	-15	89 4100	89 3180	89 2920	89 2670	89 2430	91 103
-10	88 4140	88 3200	88 2930	88 2680	88 2440	92 105	-10	89 4170	89 3240	89 2970	89 2720	89 2480	91 103
-5	88 4210	88 3260	88 2980	88 2730	88 2490	92 105	-5	89 4240	89 3290	89 3020	89 2760	89 2520	91 103
0	88 4270	88 3310	88 3030	88 2770	88 2530	92 105	0	88 4300	88 3340	88 3070	88 2810	88 2560	91 103
5	88 4330	88 3360	88 3080	88 2820	88 2570	92 105	5	88 4360	88 3390	88 3110	88 2850	88 2610	91 103
10	88 4400	88 3410	88 3130	88 2860	88 2610	92 105	10	88 4430	88 3450	88 3160	88 2900	88 2650	91 103
15	88 4470	88 3470	88 3180	88 2910	88 2660	92 105	15	88 4500	88 3500	88 3210	88 2940	88 2690	91 103
20	87 4480	87 3480	87 3190	87 2920	87 2670	92 105	20	88 4510	88 3510	88 3220	88 2950	88 2700	91 103
25	87 4500	87 3490	87 3200	87 2930	87 2670	92 104	25	87 4520	87 3520	87 3230	87 2960	87 2710	91 103
30	85 4360	85 3380	85 3100	85 2840	85 2590	92 104	30	85 4380	85 3410	85 3120	85 2860	85 2620	90 103
35	83 4200	83 3250	83 2980	83 2720	83 2480	92 103	35	83 4200	83 3270	83 2990	83 2740	83 2500	90 102
40	80 4040	80 3120	80 2860	80 2610	81 2410	92 103	40	81 4040	81 3130	81 2870	81 2620	81 2390	90 101
45	78 3890	80 3170	81 2960	82 2750	82 2550	92 103	45	78 3880	78 3000	78 2770	79 2570	80 2380	90 101
50	79 4090	82 3360	82 3130	83 2910	84 2700	92 103	50	77 3830	79 3140	80 2920	81 2720	81 2520	90 101
54	81 4290	83 3510	84 3270	84 3050	85 2830	92 103	54	78 4010	80 3280	81 3060	82 2840	82 2640	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-25	89 4010	89 3120	89 2860	89 2620	89 2390	90 103	-25	90 4070	90 3180	90 2920	90 2680	90 2450	90 104
-20	89 4080	89 3170	89 2910	89 2670	89 2440	90 103	-20	89 4140	89 3240	89 2970	89 2730	89 2490	90 104
-15	89 4140	89 3230	89 2960	89 2710	89 2480	90 103	-15	89 4210	89 3290	89 3020	89 2770	89 2540	90 104
-10	89 4210	89 3290	89 3020	89 2760	89 2530	90 103	-10	89 4270	89 3350	89 3080	89 2820	89 2590	90 104
-5	89 4280	89 3340	89 3070	89 2810	89 2570	90 103	-5	89 4340	89 3400	89 3130	89 2870	89 2630	90 104
0	89 4340	89 3390	89 3110	89 2850	89 2610	90 103	0	89 4400	89 3450	89 3170	89 2910	89 2670	90 104
5	89 4410	89 3440	89 3160	89 2900	89 2650	90 103	5	89 4460	89 3500	89 3220	89 2960	89 2710	90 104
10	89 4470	89 3490	89 3210	89 2940	89 2700	90 103	10	89 4530	89 3550	89 3270	89 3000	89 2750	90 104
15	89 4540	89 3550	89 3260	89 2990	89 2740	90 103	15	89 4590	89 3610	89 3320	89 3050	89 2800	90 104
20	88 4540	88 3550	88 3260	88 3000	88 2740	89 102	20	88 4600	88 3610	88 3320	88 3050	88 2800	89 102
25	87 4550	87 3560	87 3270	87 3000	87 2750	89 102	25	88 4600	88 3610	88 3320	88 3050	88 2800	89 102
30	85 4400	85 3440	85 3160	85 2900	85 2650	89 101	30	86 4440	86 3480	86 3200	86 2940	86 2690	87 100
35	83 4220	83 3290	83 3020	83 2760	83 2530	89 101	35	83 4250	83 3320	83 3050	83 2800	83 2560	87 99
40	81 4040	81 3150	81 2880	81 2640	81 2410	88 100	40	81 4060	81 3170	81 2910	81 2660	81 2430	87 99
45	78 3870	78 3010	78 2750	78 2520	78 2290	88 99	45	79 3020	79 3020	79 2770	79 2530	79 2310	86 98
50	76 3720	76 2930	77 2730	78 2540	79 2350	88 99	50	76 3720	76 2890	76 2640	76 2410	76 2200	86 98
54	75 3750	78 3060	78 2850	79 2650	80 2450	88 99	54	74 3600	75 2850	76 2660	76 2460	77 2280	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	
-25	90 4160	90 3260	90 3000	90 2760	90 2520	91 105	-25	90 4260	90 3360	90 3100	90 2850	90 2620	92 106
-20	90 4220	90 3320	90 3050	90 2800	90 2570	91 105	-20	90 4330	90 3420	90 3150	90 2900	90 2660	92 106
-15	90 4290	90 3370	90 3100	90 2850	90 2610	91 105	-15	90 4400	90 3470	90 3200	90 2950	90 2710	92 106
-10	90 4360	90 3430	90 3150	90 2900	90 2660	91 105	-10	90 4460	90 3530	90 3250	90 3000	90 2750	92 106
-5	90 4420	90 3480	90 3200	90 2950	90 2700	91 105	-5	90 4530	90 3580	90 3300	90 3040	90 2800	92 106
0	89 4480	89 3530	89 3250	89 2990	89 2740	91 105	0	90 4590	90 3630	90 3350	90 3090	90 2840	92 106
5	89 4540	89 3580	89 3300	89 3030	89 2790	91 105	5	90 4650	90 3680	90 3400	90 3130	90 2880	92 106
10	89 4610	89 3630	89 3350	89 3080	89 2830	91 105	10	90 4710	90 3730	90 3440	90 3180	90 2920	92 106
15	89 4670	89 3680	89 3390	89 3120	89 2870	91 105	15	90 4780	90 3780	90 3490	90 3220	90 2960	92 106
20	89 4670	89 3680	89 3390	89 3120	89 2870	90 104	20	89 4770	89 3780	89 3490	89 3220	89 2960	91 105
25	88 4670	88 3680	88 3390	88 3120	88 2870	90 103	25	88 4760	88 3770	88 3480	88 3210	88 2960	90 104
30	86 4500	86 3540	86 3260	86 3000	86 2750	87 101	30	86 4570	86 3620	86 3340	86 3070	86 2820	88 102
35	84 4290	84 3370	84 3100	84 2850	84 2610	85 98	35	84 4350	84 3430	84 3160	84 2910	84 2670	85 99
40	81 4090	81 3200	81 2940	81 2700	81 2470	85 97	40	82 4130	82 3250	82 2990	82 2750	82 2520	83 96
45	79 3900	79 3040	79 2790	79 2560	79 2340	85 97	45	79 3920	79 3080	79 2830	79 2590	79 2370	82 95
50	76 3720	76 2900	76 2660	76 2430	76 2220	84 96	50	77 3740	77 2930	77 2680	77 2460	77 2240	82 95
54	74 3600	74 2800	74 2560	74 2340	74 2130	84 96	54	75 3610	75 2820	75 2580	75 2360	75 2150	82 94

Figure S25-4 (Sheet 2 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS					WEIGHT = 16000 LBS										VENR = 160 KIAS				
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S					VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S					VR	V2						
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST				V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT		
-25	88	4070	88	3090	88	2870	89	2660	90	2470	102	112	-25	88	4060	88	3090	88	2810	88	2570	89	2380	101	111				
-20	87	4140	87	3150	88	2930	89	2720	90	2520	102	112	-20	88	4140	88	3150	88	2870	88	2630	89	2430	101	111				
-15	87	4220	87	3210	88	2980	89	2770	90	2570	102	112	-15	88	4210	88	3210	88	2920	88	2680	89	2480	101	111				
-10	87	4300	87	3270	88	3040	89	2820	90	2620	102	112	-10	87	4290	87	3270	87	2980	88	2730	89	2530	101	111				
-5	87	4380	87	3330	88	3090	89	2880	90	2670	102	112	-5	87	4370	87	3330	87	3040	88	2780	88	2580	101	111				
0	87	4460	87	3390	88	3150	89	2930	90	2720	102	112	0	87	4450	87	3390	87	3090	88	2830	88	2630	101	111				
5	87	4530	87	3450	88	3210	89	2990	90	2780	102	112	5	87	4520	87	3450	87	3150	88	2880	88	2680	101	111				
10	87	4610	87	3510	88	3270	89	3040	90	2830	102	112	10	87	4600	87	3510	87	3200	87	2940	88	2730	101	111				
15	87	4640	87	3580	88	3350	89	3120	90	2900	102	112	15	87	4630	87	3540	87	3230	88	3010	89	2800	101	111				
20	85	4610	88	3700	89	3460	90	3230	91	3000	102	112	20	86	4590	86	3580	87	3350	88	3120	89	2900	101	111				
25	85	4670	89	3850	90	3600	90	3350	91	3120	102	112	25	84	4530	87	3720	88	3470	89	3240	90	3010	101	111				
30	87	4920	90	4060	91	3790	92	3530	92	3290	102	112	30	85	4750	89	3920	89	3660	90	3410	91	3180	101	111				
35	88	5200	91	4280	92	4000	93	3730	94	3480	102	112	35	87	5020	90	4130	91	3860	92	3600	92	3350	101	111				
40	90	5510	92	4540	93	4240	94	3960	95	3680	102	112	40	88	5320	91	4380	92	4090	93	3810	94	3550	101	111				
45	91	5860	94	4830	95	4510	95	4200	96	3910	102	112	45	90	5650	93	4650	93	4340	94	4050	95	3770	101	111				
48	92	6090	95	5010	95	4680	96	4360	97	4060	102	112	50	91	6010	94	4950	95	4620	95	4310	96	4010	101	111				
50	92	6240	95	5130	96	4800	96	4470	97	4160	102	112	52	92	6170	94	5070	95	4740	96	4420	96	4110	101	111				

WEIGHT = 15500 LBS										VENR = 160 KIAS				WEIGHT = 15000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	KIAS				
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST					10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT		
-25	88	4050	88	3090	88	2820	88	2570	88	2330	99	110	-25	88	4050	88	3100	88	2830	88	2580	88	2340	98	109		
-20	88	4130	88	3150	88	2870	88	2620	88	2370	99	110	-20	88	4130	88	3160	88	2880	88	2630	88	2390	98	109		
-15	88	4200	88	3210	88	2930	88	2670	88	2420	99	110	-15	88	4200	88	3220	88	2940	88	2680	88	2440	98	109		
-10	88	4280	88	3270	88	2990	88	2720	88	2470	99	110	-10	88	4280	88	3280	88	3000	88	2730	88	2480	98	109		
-5	88	4360	88	3330	88	3040	88	2770	88	2520	99	110	-5	88	4350	88	3340	88	3050	88	2780	88	2530	98	109		
0	88	4430	88	3390	88	3100	88	2820	88	2570	99	110	0	88	4430	88	3400	88	3110	88	2830	88	2580	98	109		
5	88	4510	88	3450	88	3150	88	2870	88	2610	99	110	5	88	4500	88	3460	88	3160	88	2880	88	2630	98	109		
10	87	4590	87	3510	87	3210	87	2920	87	2660	99	110	10	88	4580	88	3520	88	3210	88	2930	88	2670	98	109		
15	87	4610	87	3530	87	3230	87	2940	87	2680	99	110	15	87	4600	87	3540	87	3230	87	2950	87	2690	98	108		
20	86	4570	86	3500	86	3200	86	2940	87	2740	99	110	20	86	4560	86	3500	86	3200	86	2920	86	2660	98	108		
25	84	4510	85	3510	86	3280	87	3060	88	2840	99	110	25	85	4490	85	3450	85	3160	85	2880	85	2670	98	108		
30	83	4480	86	3690	87	3450	88	3210	89	2990	99	110	30	82	4350	84	3480	85	3240	86	3020	87	2810	98	108		
35	85	4730	89	3890	89	3640	89	3390	90	3150	99	110	35	83	4450	86	3660	86	3420	87	3190	88	2960	98	108		
40	86	5000	89	4120	90	3850	91	3590	91	3340	99	110	40	84	4710	87	3870	88	3620	88	3370	89	3130	97	108		
45	88	5310	90	4370	91	4080	92	3810	93	3540	99	110	45	86	4990	88	4110	89	3830	90	3570	90	3320	97	108		
50	89	5650	92	4640	92	4340	93	4040	94	3760	99	109	50	87	5300	90	4360	90	4070	91	3790	92	3530	97	108		
52	90	5790	92	4760	93	4450	94	4150	94	3860	99	109	52	88	5440	90	4470	91	4170	91	3890	92	3610	97	108		

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
1000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT											
-25	89	4100	89	3170	89	2900	89	2650	89	2420	92 105	-25	89	4130	89	3210	89	2940	89	2690	89	2450	91 103								
-20	89	4170	89	3220	89	2950	89	2700	89	2460	92 105	-20	89	4200	89	3260	89	2990	89	2740	89	2500	91 103								
-15	89	4240	89	3280	89	3010	89	2750	89	2510	92 105	-15	89	4270	89	3320	89	3050	89	2790	89	2550	91 103								
-10	89	4310	89	3340	89	3060	89	2800	89	2560	92 105	-10	89	4340	89	3380	89	3100	89	2840	89	2590	91 103								
-5	89	4390	89	3400	89	3120	89	2850	89	2600	92 105	-5	89	4420	89	3440	89	3150	89	2890	89	2640	91 103								
0	89	4460	89	3460	89	3170	89	2900	89	2650	92 105	0	89	4490	89	3490	89	3210	89	2940	89	2690	91 103								
5	88	4530	88	3510	88	3220	88	2950	88	2700	92 105	5	89	4560	89	3550	89	3260	89	2990	89	2730	91 103								
10	88	4600	88	3570	88	3270	88	3000	88	2740	92 105	10	89	4630	89	3610	89	3310	89	3040	89	2780	91 103								
15	88	4620	88	3590	88	3290	88	3010	88	2750	92 105	15	88	4640	88	3620	88	3320	88	3050	88	2790	91 103								
20	87	4560	87	3540	87	3250	87	2970	87	2720	92 104	20	87	4580	87	3570	87	3270	87	3000	87	2750	91 103								
25	85	4480	85	3480	85	3190	85	2920	85	2670	92 104	25	86	4500	86	3500	86	3210	86	2940	86	2690	90 103								
30	83	4320	83	3350	83	3070	83	2800	83	2560	92 103	30	83	4320	83	3360	83	3080	83	2820	83	2580	90 102								
35	81	4160	81	3220	81	2950	81	2690	81	2460	92 103	35	81	4160	81	3230	81	2960	81	2710	81	2470	90 102								
40	78	4010	80	3200	80	2990	81	2780	82	2580	92 103	40	79	4000	79	3100	79	2840	79	2590	79	2410	90 101								
45	79	4120	81	3380	82	3150	83	2940	83	2730	92 103	45	76	3850	79	3160	79	2950	80	2740	81	2540	90 101								
50	80	4360	83	3580	83	3340	84	3110	85	2890	92 103	50	78	4080	80	3340	81	3120	82	2900	82	2690	90 101								
52	81	4460	83	3660	84	3420	85	3180	85	2950	92 103	52	78	4170	81	3420	81	3190	82	2970	83	2750	90 101								

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																			
-25	89	4180	89	3260	89	2990	89	2740	89	2500	90	104	-25	90	4240	90	3320	90	3050	90	2800	90	2560	91	104														
-20	89	4250	89	3310	89	3040	89	2790	89	2550	90	104	-20	90	4310	90	3380	90	3100	90	2850	90	2610	91	104														
-15	89	4320	89	3370	89	3090	89	2840	89	2600	90	104	-15	90	4380	90	3430	90	3160	90	2900	90	2660	91	104														
-10	89	4390	89	3430	89	3150	89	2890	89	2640	90	104	-10	90	4450	90	3490	90	3210	90	2950	90	2700	91	105														
-5	89	4460	89	3480	89	3200	89	2940	89	2690	90	104	-5	89	4520	89	3550	89	3260	89	3000	89	2750	91	104														
0	89	4530	89	3540	89	3260	89	2990	89	2740	90	104	0	89	4590	89	3610	89	3320	89	3050	89	2800	91	104														
5	89	4600	89	3600	89	3310	89	3040	89	2780	90	103	5	89	4660	89	3660	89	3370	89	3100	89	2840	91	104														
10	89	4670	89	3650	89	3360	89	3080	89	2830	90	103	10	89	4730	89	3720	89	3420	89	3150	89	2890	91	104														
15	88	4680	88	3660	88	3370	88	3090	88	2840	90	103	15	89	4740	89	3720	89	3430	89	3150	89	2890	90	104														
20	87	4610	87	3610	87	3320	87	3040	87	2790	89	102	20	87	4660	87	3660	87	3370	87	3100	87	2840	89	102														
25	86	4520	86	3530	86	3250	86	2980	86	2730	89	101	25	86	4560	86	3580	86	3290	86	3030	86	2770	87	101														
30	84	4340	84	3390	84	3110	84	2850	84	2610	89	101	30	84	4370	84	3420	84	3140	84	2890	84	2640	87	99														
35	81	4170	81	3250	81	2980	81	2730	81	2490	88	100	35	82	4180	82	3270	82	3000	82	2750	82	2520	87	99														
40	79	4000	79	3110	79	2850	79	2610	79	2380	88	100	40	79	4010	79	3130	79	2870	79	2630	79	2400	87	98														
45	76	3840	76	2980	77	2750	77	2560	78	2370	88	99	45	77	3840	77	2990	77	2740	77	2500	77	2280	86	98														
50	75	3810	78	3120	78	2910	79	2700	80	2500	88	99	50	74	3690	75	2900	75	2710	76	2510	77	2330	86	97														
52	76	3890	78	3190	79	2970	79	2760	80	2560	88	99	52	73	3640	75	2970	76	2770	77	2570	77	2380	86	97														

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-25	90 4330	90 3400	90 3130	90 2880	90 2640	92 105		-25	91 4440	91 3510	91 3240	91 2980	91 2740	92 107																	
-20	90 4390	90 3460	90 3180	90 2930	90 2690	92 105		-20	90 4510	90 3560	90 3290	90 3030	90 2780	92 106																	
-15	90 4470	90 3520	90 3240	90 2980	90 2730	92 105		-15	90 4580	90 3620	90 3340	90 3080	90 2830	92 107																	
-10	90 4540	90 3570	90 3290	90 3030	90 2780	92 105		-10	90 4650	90 3680	90 3400	90 3130	90 2880	92 107																	
-5	90 4610	90 3630	90 3350	90 3080	90 2830	92 105		-5	90 4720	90 3740	90 3450	90 3180	90 2930	92 107																	
0	90 4680	90 3690	90 3400	90 3130	90 2870	92 105		0	90 4790	90 3790	90 3500	90 3230	90 2970	92 106																	
5	90 4740	90 3740	90 3450	90 3180	90 2920	92 105		5	90 4850	90 3850	90 3550	90 3280	90 3020	92 106																	
10	90 4810	90 3800	90 3500	90 3220	90 2960	91 105		10	90 4920	90 3900	90 3600	90 3320	90 3060	92 106																	
15	89 4820	89 3800	89 3500	89 3230	89 2970	91 105		15	89 4920	89 3900	89 3600	89 3320	89 3060	92 106																	
20	88 4730	88 3730	88 3440	88 3160	88 2910	89 103		20	88 4820	88 3820	88 3530	88 3250	88 2990	90 104																	
25	86 4620	86 3640	86 3350	86 3080	86 2830	88 101		25	87 4700	87 3720	87 3430	87 3160	87 2910	88 102																	
30	84 4410	84 3470	84 3190	84 2930	84 2690	85 99		30	84 4470	84 3530	84 3260	84 3000	84 2750	86 99																	
35	82 4210	82 3310	82 3040	82 2790	82 2560	85 97		35	82 4260	82 3360	82 3090	82 2840	82 2610	83 97																	
40	79 4030	79 3150	79 2900	79 2650	79 2430	85 97		40	80 4060	80 3190	80 2930	80 2690	80 2460	82 95																	
45	77 3850	77 3010	77 2760	77 2520	77 2300	84 96		45	77 3870	77 3030	77 2780	77 2550	77 2330	82 95																	
50	74 3690	74 2870	74 2630	74 2410	74 2190	84 96		50	75 3700	75 2890	75 2650	75 2430	75 2210	82 94																	
52	74 3630	74 2830	74 2590	74 2380	74 2210	84 95		52	74 3640	74 2840	74 2600	74 2380	74 2170	82 94																	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 160 KIAS									WEIGHT = 16000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S						TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S															
	10 KTS		V1 DIST	20 KTS		30 KTS		VR	V2	10 KTS		V1 DIST		20 KTS		30 KTS		VR	V2																
	V1	DIST		V1	DIST	V1	DIST			V1	DIST			V1	DIST	V1	DIST			V1	DIST														
	KIAS	FT		KIAS	FT	KIAS	FT			KIAS	FT			KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT										
-25	88	4250	88	3230	88	2950	89	2750	90	2540	102	112	-25	88	4240	88	3230	88	2940	88	2680	88	2460	101	111										
-20	88	4330	88	3290	88	3010	89	2800	90	2600	102	112	-20	88	4320	88	3290	88	3000	88	2730	88	2510	101	111										
-15	88	4410	88	3360	88	3070	89	2860	90	2650	102	112	-15	88	4400	88	3360	88	3060	88	2790	88	2560	101	111										
-10	88	4490	88	3420	88	3130	89	2910	90	2710	102	112	-10	88	4480	88	3420	88	3120	88	2840	88	2610	101	111										
-5	88	4580	88	3490	88	3180	89	2970	89	2760	102	112	-5	88	4570	88	3490	88	3180	88	2900	88	2660	101	111										
0	88	4670	88	3560	88	3240	88	3020	89	2810	102	112	0	88	4660	88	3550	88	3240	88	2960	88	2710	101	111										
5	88	4750	88	3620	88	3300	88	3080	89	2860	102	112	5	88	4740	88	3620	88	3300	88	3010	88	2770	101	111										
10	87	4830	87	3680	87	3360	88	3130	89	2920	102	112	10	88	4820	88	3680	88	3360	88	3060	88	2820	101	111										
15	86	4760	87	3740	88	3490	89	3260	90	3030	102	112	15	86	4750	86	3630	87	3380	88	3150	89	2930	101	111										
20	85	4740	88	3910	89	3660	90	3410	91	3180	102	112	20	84	4640	87	3780	88	3530	89	3290	90	3070	101	111										
25	86	4980	89	4110	90	3840	91	3590	92	3340	102	112	25	85	4810	88	3970	89	3710	90	3460	91	3220	101	111										
30	88	5250	91	4340	92	4050	93	3780	93	3520	102	112	30	86	5070	89	4180	90	3910	91	3650	92	3400	101	111										
35	89	5560	92	4590	93	4290	94	4000	94	3730	102	112	35	88	5370	91	4420	92	4140	92	3860	93	3590	101	111										
40	90	5900	93	4870	94	4550	95	4240	96	3950	102	112	40	89	5690	92	4690	93	4380	94	4090	94	3810	101	111										
45	92	6290	94	5180	95	4840	96	4520	97	4200	102	112	45	91	6050	93	4990	94	4660	95	4350	95	4050	101	111										
47	92	6450	95	5310	96	4960	96	4630	97	4310	102	112	47	91	6210	94	5110	95	4780	95	4460	96	4150	101	111										
													50	92	6450	95	5310	95	4960	96	4630	96	4310	101	111										

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	VR V2	10 KTS		V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	VR V2	10 KTS	V1 DIST		V1 DIST	V1 DIST	20 KTS	30 KTS	VR V2								
	V1	DIST	V1	DIST	V1	DIST		V1		DIST	V1	DIST	V1	DIST		V1	DIST		V1	DIST	V1	DIST		V1	DIST						
	KIAS	FT	KIAS	FT	KIAS	FT		KIAS		FT	KIAS	FT	KIAS	FT		KIAS	FT		KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT				
-25	88	4230	88	3230	88	2950	88	2690	88	2440	99	110	-25	88	4230	88	3240	88	2960	88	2700	88	2450	98	109						
-20	88	4310	88	3300	88	3010	88	2740	88	2490	99	110	-20	88	4310	88	3300	88	3020	88	2750	88	2500	98	109						
-15	88	4390	88	3360	88	3060	88	2790	88	2540	99	110	-15	88	4390	88	3370	88	3070	88	2800	88	2550	98	109						
-10	88	4470	88	3420	88	3120	88	2850	88	2590	99	110	-10	88	4470	88	3430	88	3130	88	2860	88	2600	98	109						
-5	88	4560	88	3490	88	3190	88	2900	88	2640	99	110	-5	88	4550	88	3500	88	3190	88	2920	88	2660	98	109						
0	88	4640	88	3560	88	3250	88	2960	88	2700	99	110	0	88	4640	88	3560	88	3260	88	2970	88	2710	98	109						
5	88	4720	88	3620	88	3300	88	3010	88	2750	99	110	5	88	4710	88	3620	88	3310	88	3030	88	2760	98	109						
10	88	4800	88	3680	88	3360	88	3070	88	2790	99	110	10	88	4790	88	3680	88	3370	88	3080	88	2810	98	109						
15	86	4730	86	3620	86	3310	86	3020	86	2760	99	110	15	87	4710	87	3620	87	3310	87	3030	87	2760	98	108						
20	85	4620	85	3560	86	3330	87	3110	88	2890	99	110	20	85	4600	85	3530	85	3230	85	2950	85	2720	98	108						
25	83	4530	86	3740	87	3490	88	3260	89	3030	99	110	25	83	4470	84	3520	85	3290	86	3070	86	2850	98	108						
30	84	4780	87	3940	88	3680	89	3440	90	3200	99	110	30	82	4500	85	3710	86	3460	87	3230	88	3010	98	108						
35	86	5050	89	4160	90	3890	90	3630	91	3380	99	110	35	84	4750	86	3910	87	3660	88	3410	89	3170	97	108						
40	87	5350	90	4410	91	4120	92	3840	92	3580	99	110	40	85	5020	88	4140	89	3870	89	3610	90	3360	97	108						
45	89	5680	91	4680	92	4380	93	4080	93	3800	99	109	45	87	5330	89	4390	90	4110	91	3830	91	3560	97	108						
50	90	6050	93	4980	93	4650	94	4340	94	4040	99	109	50	88	5670	90	4670	91	4360	92	4070	92	3790	97	108						

WEIGHT = 14500 LBS									VENR = 160 KIAS									WEIGHT = 14000 LBS									VENR = 160 KIAS								
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2												
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST	V1 DIST			20 KTS	30 KTS																					
						V1 DIST	V1 DIST							V1 DIST	V1 DIST																				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS														
-25	89	4240	89	3260	89	2980	89	2720	89	2470	96	107	-25	89	4250	89	3280	89	3000	89	2740	89	2500	94	106										
-20	89	4310	89	3320	89	3030	89	2770	89	2520	96	107	-20	89	4320	89	3340	89	3060	89	2790	89	2550	94	106										
-15	88	4390	88	3380	88	3090	88	2820	88	2570	96	107	-15	89	4400	89	3400	89	3110	89	2850	89	2600	94	106										
-10	88	4470	88	3440	88	3150	88	2880	88	2620	96	107	-10	89	4480	89	3460	89	3170	89	2900	89	2650	94	106										
-5	88	4550	88	3510	88	3210	88	2930	88	2670	96	107	-5	89	4560	89	3530	89	3230	89	2960	89	2700	94	106										
0	88	4640	88	3570	88	3270	88	2990	88	2730	96	107	0	89	4650	89	3590	89	3290	89	3010	89	2750	94	106										
5	88	4710	88	3630	88	3330	88	3040	88	2780	96	107	5	88	4720	88	3650	88	3350	88	3060	88	2800	94	106										
10	88	4790	88	3690	88	3380	88	3090	88	2820	96	107	10	88	4800	88	3710	88	3400	88	3110	88	2850	94	106										
15	87	4710	87	3630	87	3320	87	3040	87	2770	96	107	15	87	4710	87	3640	87	3340	87	3050	87	2790	94	106										
20	85	4580	85	3530	85	3230	85	2960	85	2700	96	107	20	85	4580	85	3540	85	3250	85	2970	85	2710	94	105										
25	83	4450	83	3430	83	3140	83	2880	84	2680	96	106	25	83	4440	83	3430	83	3140	83	2870	83	2620	94	105										
30	81	4310	83	3490	84	3250	84	3030	85	2820	96	106	30	81	4290	81	3310	81	3050	82	2850	83	2650	94	105										
35	81	4460	84	3670	85	3430	86	3200	87	2980	96	106	35	79	4190	82	3450	83	3220	83	3000	84	2790	94	105										
40	83	4720	86	3890	86	3630	87	3380	88	3150	96	106	40	81	4420	83	3640	84	3400	85	3170	85	2950	94	105										
45	84	5000	87	4120	88	3850	88	3590	89	3340	96	106	45	82	4690	85	3860	85	3600	86	3360	87	3120	94	104										
50	86	5310	88	4370	89	4080	90	3810	90	3540	96	106	50	84	4970	86	4090	87	3820	87	3560	88	3310	94	104										

Figure S25-4 (Sheet 5 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
2000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S									
	10 KTS		WIND		10 KTS		20 KTS		30 KTS			10 KTS		WIND		10 KTS		20 KTS		30 KTS					
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-25	89	4270	89	3310	89	3030	89	2770	89	2530	92	105	-25	89	4310	89	3350	89	3070	89	2810	89	2570	91	104
-20	89	4350	89	3370	89	3090	89	2820	89	2580	92	105	-20	89	4380	89	3410	89	3130	89	2860	89	2620	91	104
-15	89	4420	89	3430	89	3140	89	2880	89	2630	92	105	-15	89	4460	89	3470	89	3180	89	2920	89	2670	91	104
-10	89	4500	89	3490	89	3200	89	2930	89	2680	92	105	-10	89	4530	89	3530	89	3240	89	2970	89	2720	91	104
-5	89	4580	89	3560	89	3260	89	2990	89	2730	92	105	-5	89	4610	89	3590	89	3300	89	3030	89	2770	91	104
0	89	4660	89	3620	89	3320	89	3040	89	2780	92	105	0	89	4690	89	3660	89	3360	89	3080	89	2820	91	104
5	89	4740	89	3680	89	3380	89	3090	89	2830	92	105	5	89	4770	89	3720	89	3410	89	3130	89	2870	91	104
10	89	4810	89	3740	89	3430	89	3140	89	2880	92	105	10	89	4840	89	3770	89	3470	89	3180	89	2920	91	104
15	87	4720	87	3660	87	3360	87	3080	87	2820	92	105	15	87	4740	87	3690	87	3390	87	3110	87	2850	91	103
20	85	4580	85	3560	85	3260	85	2990	85	2730	92	104	20	86	4600	86	3580	86	3290	86	3010	86	2760	90	103
25	83	4430	83	3440	83	3150	83	2890	83	2630	92	104	25	84	4440	84	3460	84	3170	84	2900	84	2660	90	102
30	81	4280	81	3320	81	3040	81	2780	81	2530	92	103	30	81	4280	81	3330	81	3050	81	2790	81	2550	90	102
35	79	4130	79	3230	80	3020	81	2810	81	2610	92	103	35	79	4120	79	3200	79	2930	79	2680	79	2440	90	101
40	78	4150	81	3410	82	3180	82	2960	83	2750	92	103	40	77	3980	78	3190	79	2980	80	2770	80	2570	90	101
45	80	4390	82	3610	83	3370	84	3140	84	2910	92	103	45	77	4100	80	3370	80	3140	81	2930	82	2720	90	101
50	81	4650	84	3820	84	3570	85	3320	85	3090	92	103	50	79	4340	81	3570	82	3330	82	3100	83	2880	90	101

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-25	90	4360	90	3400	90	3120	90	2860	90	2620	91 104	-25	90	4420	90	3470	90	3190	90	2930	90	2680	91 105																
-20	90	4430	90	3460	90	3180	90	2910	90	2670	91 104	-20	90	4490	90	3520	90	3240	90	2980	90	2730	91 105																
-15	90	4500	90	3520	90	3230	90	2970	90	2720	91 104	-15	90	4570	90	3580	90	3300	90	3030	90	2780	91 105																
-10	89	4580	89	3580	89	3290	89	3020	89	2770	91 104	-10	90	4640	90	3650	90	3360	90	3080	90	2830	91 105																
-5	89	4660	89	3640	89	3350	89	3080	89	2820	91 104	-5	90	4720	90	3710	90	3420	90	3140	90	2880	91 105																
0	89	4740	89	3710	89	3410	89	3130	89	2870	91 104	0	90	4800	90	3770	90	3480	90	3200	90	2940	91 105																
5	89	4810	89	3770	89	3460	89	3180	89	2920	91 104	5	90	4870	90	3830	90	3530	90	3250	90	2980	91 105																
10	89	4880	89	3820	89	3520	89	3230	89	2970	91 104	10	90	4950	90	3890	90	3580	90	3300	90	3030	91 105																
15	88	4770	88	3740	88	3440	88	3160	88	2890	89 102	15	88	4820	88	3790	88	3490	88	3210	88	2950	90 103																
20	86	4620	86	3610	86	3320	86	3050	86	2790	89 101	20	86	4660	86	3660	86	3370	86	3100	86	2840	87 101																
25	84	4460	84	3480	84	3200	84	2930	84	2680	89 101	25	84	4480	84	3520	84	3230	84	2970	84	2720	87 100																
30	82	4280	82	3340	82	3070	82	2810	82	2570	88 100	30	82	4300	82	3370	82	3100	82	2840	82	2600	87 99																
35	79	4120	79	3210	79	2940	79	2690	79	2460	88 100	35	80	4130	80	3230	80	2960	80	2720	80	2480	87 98																
40	77	3970	77	3080	77	2830	77	2580	78	2400	88 99	40	77	3970	77	3090	77	2840	77	2600	77	2370	86 98																
45	75	3830	77	3150	78	2930	78	2730	79	2530	88 99	45	75	3810	75	2970	75	2730	76	2540	76	2350	86 97																
50	76	4050	79	3320	79	3100	80	2880	80	2680	88 99	50	74	3770	76	3090	76	2880	77	2680	78	2480	86 97																

WEIGHT = 11500 LBS										VENR = 160 KIAS		WEIGHT = 11000 LBS										VENR = 160 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							
-25	90	4510	90	3550	90	3270	90	3010	90	2760	92	106	-25	91	4630	91	3660	91	3380	91	3110	91	2870	93	107
-20	90	4580	90	3610	90	3330	90	3060	90	2810	92	106	-20	91	4700	91	3720	91	3430	91	3170	91	2910	93	107
-15	90	4650	90	3670	90	3380	90	3110	90	2860	92	106	-15	91	4770	91	3780	91	3490	91	3220	91	2960	93	107
-10	90	4730	90	3730	90	3440	90	3170	90	2910	92	106	-10	91	4840	91	3840	91	3550	91	3270	91	3010	93	107
-5	90	4810	90	3790	90	3500	90	3220	90	2960	92	106	-5	91	4920	91	3910	91	3610	91	3330	91	3070	93	107
0	90	4890	90	3860	90	3560	90	3280	90	3020	92	106	0	90	5000	90	3970	90	3670	90	3390	90	3120	93	107
5	90	4960	90	3920	90	3610	90	3330	90	3060	92	106	5	90	5070	90	4030	90	3720	90	3430	90	3170	93	107
10	90	5030	90	3970	90	3670	90	3380	90	3110	92	106	10	90	5140	90	4080	90	3770	90	3480	90	3210	93	107
15	88	4900	88	3860	88	3560	88	3280	88	3020	90	104	15	89	4990	89	3960	89	3660	89	3380	89	3110	91	105
20	86	4720	86	3720	86	3430	86	3160	86	2900	88	102	20	87	4800	87	3800	87	3510	87	3230	87	2980	89	103
25	84	4530	84	3560	84	3280	84	3020	84	2770	86	99	25	85	4590	85	3630	85	3350	85	3080	85	2840	86	100
30	82	4330	82	3410	82	3130	82	2880	82	2640	85	98	30	82	4380	82	3460	82	3190	82	2930	82	2690	84	97
35	80	4150	80	3250	80	2990	80	2740	80	2510	85	97	35	80	4180	80	3290	80	3030	80	2790	80	2550	83	96
40	77	3980	77	3110	77	2860	77	2620	77	2390	84	96	40	78	4000	78	3140	78	2890	78	2650	78	2420	82	95
45	75	3810	75	2980	75	2730	75	2490	75	2280	84	96	45	75	3820	75	2990	75	2750	75	2520	75	2300	82	94
50	73	3670	73	2870	74	2680	74	2490	75	2300	84	95	50	73	3670	73	2860	73	2620	73	2400	73	2190	82	94

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 160 KIAS								WEIGHT = 16000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2		TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2													
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS				V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT														
-30	88	4350	88	3310	88	3010	89	2770	89	2580	102	112	-30	88	4340	88	3310	88	3020	88	2740	88	2490	101	111						
-25	88	4430	88	3370	88	3070	89	2830	89	2630	102	112	-25	88	4420	88	3370	88	3070	88	2800	88	2540	101	111						
-20	88	4520	88	3440	88	3140	88	2890	89	2690	102	112	-20	88	4510	88	3440	88	3140	88	2860	88	2600	101	111						
-15	88	4610	88	3510	88	3200	88	2950	89	2740	102	112	-15	88	4600	88	3510	88	3200	88	2920	88	2650	101	111						
-10	88	4700	88	3580	88	3260	88	3010	89	2800	102	112	-10	88	4680	88	3580	88	3260	88	2970	88	2700	101	111						
-5	88	4780	88	3640	88	3320	88	3060	89	2850	102	112	-5	88	4770	88	3640	88	3320	88	3030	88	2760	101	111						
0	88	4850	88	3700	88	3370	88	3130	89	2910	102	112	0	88	4840	88	3690	88	3370	88	3070	88	2810	101	111						
5	87	4890	87	3720	87	3440	88	3210	89	2990	102	112	5	87	4870	87	3720	87	3400	87	3110	88	2890	101	111						
10	86	4890	87	3790	88	3550	89	3310	90	3080	102	112	10	86	4870	86	3720	87	3430	88	3200	88	2980	101	111						
15	85	4810	88	3970	89	3720	90	3470	91	3230	102	112	15	84	4750	87	3840	88	3590	89	3350	90	3120	101	111						
20	86	5050	89	4170	90	3900	91	3640	92	3400	102	112	20	85	4880	88	4030	89	3770	90	3520	91	3280	101	111						
25	87	5320	90	4400	91	4110	92	3840	93	3580	102	112	25	86	5140	89	4240	90	3970	91	3710	92	3450	101	111						
30	89	5630	92	4650	93	4350	93	4060	94	3780	102	112	30	87	5430	90	4480	91	4190	92	3910	93	3650	101	111						
35	90	5960	93	4920	94	4600	94	4300	95	4010	102	112	35	89	5740	92	4740	92	4440	93	4140	94	3860	101	111						
40	91	6330	94	5220	95	4890	96	4560	96	4250	102	112	40	90	6100	93	5030	94	4710	94	4390	95	4090	101	111						
41	91	6410	94	5290	95	4950	96	4620	96	4300	102	112	43	91	6330	94	5220	94	4880	95	4560	96	4250	101	111						
43	92	6580	95	5420	95	5070	96	4740	97	4410	102	112	45	91	6490	94	5350	95	5000	95	4670	96	4360	101	111						
													46	92	6580	94	5420	95	5070	96	4730	96	4410	101	111						

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS										
VENR = 160 KIAS								VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS
-30	88	4330	88	3310	88	3020	88 2750	88 2500	99 110	-30	89	4330	89	3320	89 3030	89 2770	89 2520	98 109
-25	88	4410	88	3380	88	3080	88 2810	88 2550	99 110	-25	89	4410	89	3380	89 3090	89 2820	89 2570	98 109
-20	88	4500	88	3440	88	3140	88 2860	88 2610	99 110	-20	88	4490	88	3450	88 3150	88 2880	88 2620	98 109
-15	88	4590	88	3510	88	3200	88 2920	88 2660	99 110	-15	88	4580	88	3520	88 3210	88 2930	88 2670	98 109
-10	88	4670	88	3580	88	3270	88 2980	88 2710	99 110	-10	88	4660	88	3580	88 3280	88 2990	88 2730	98 109
-5	88	4760	88	3640	88	3330	88 3040	88 2770	99 110	-5	88	4750	88	3650	88 3340	88 3050	88 2780	98 109
0	88	4820	88	3690	88	3370	88 3080	88 2810	99 110	0	88	4810	88	3700	88 3380	88 3090	88 2820	98 109
5	87	4850	87	3720	87	3400	87 3100	87 2820	99 110	5	88	4840	88	3720	88 3400	88 3110	88 2840	98 109
10	87	4850	87	3720	87	3400	87 3100	87 2830	99 110	10	87	4840	87	3720	87 3400	87 3110	87 2830	98 108
15	85	4720	85	3620	86	3380	86 3160	87 2940	99 110	15	85	4700	85	3620	85 3310	85 3020	85 2770	98 108
20	83	4600	86	3790	87	3550	88 3310	88 3080	99 110	20	83	4580	83	3570	84 3340	85 3120	86 2900	98 108
25	84	4840	87	4000	88	3740	89 3490	90 3250	99 110	25	82	4550	85	3760	86 3510	87 3280	87 3050	98 108
30	85	5100	88	4220	89	3940	90 3680	91 3430	99 110	30	83	4800	86	3960	87 3710	88 3460	89 3220	97 108
35	87	5400	90	4460	90	4170	91 3890	92 3630	99 110	35	85	5070	87	4190	88 3910	89 3650	90 3400	97 108
40	88	5730	91	4720	92	4420	92 4120	93 3840	99 110	40	86	5370	89	4430	89 4140	90 3870	91 3600	97 108
45	89	6090	92	5020	93	4700	93 4380	94 4080	99 109	45	87	5700	90	4710	91 4400	91 4110	92 3820	97 108
46	90	6160	92	5080	93	4750	94 4440	94 4130	99 109	48	88	5920	91	4880	91 4560	92 4260	93 3970	97 108
48	90	6320	93	5210	93	4870	94 4550	95 4240	99 109									

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2						
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS					10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS									
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-30	89	4340	89	3340	89	3050	89	2790	89	2540	96	108	-30	89	4350	89	3360	89	3080	89	2810	89	2560	94	106						
-25	89	4410	89	3400	89	3110	89	2840	89	2590	96	108	-25	89	4430	89	3420	89	3130	89	2860	89	2610	94	106						
-20	89	4500	89	3460	89	3170	89	2890	89	2640	96	108	-20	89	4510	89	3480	89	3190	89	2920	89	2660	94	106						
-15	89	4580	89	3530	89	3230	89	2950	89	2690	96	108	-15	89	4590	89	3550	89	3250	89	2980	89	2720	94	106						
-10	89	4670	89	3600	89	3290	89	3010	89	2740	96	108	-10	89	4670	89	3620	89	3310	89	3030	89	2770	94	106						
-5	89	4750	89	3660	89	3350	89	3060	89	2800	96	108	-5	89	4760	89	3680	89	3370	89	3090	89	2820	94	106						
0	88	4810	88	3710	88	3400	88	3110	88	2840	96	107	0	89	4820	89	3730	89	3420	89	3130	89	2860	94	106						
5	88	4830	88	3730	88	3410	88	3120	88	2850	96	107	5	88	4840	88	3740	88	3430	88	3140	88	2870	94	106						
10	87	4830	87	3720	87	3410	87	3120	87	2850	96	107	10	87	4830	87	3740	87	3430	87	3140	87	2870	94	106						
15	85	4690	85	3620	85	3310	85	3030	85	2760	96	107	15	85	4680	85	3620	85	3320	85	3040	85	2780	94	105						
20	83	4560	83	3520	83	3220	83	2940	84	2730	96	106	20	83	4550	83	3520	83	3220	83	2950	83	2690	94	105						
25	81	4420	82	3530	83	3300	84	3080	85	2870	96	106	25	81	4400	81	3400	81	3120	82	2890	82	2690	94	105						
30	81	4510	84	3720	85	3480	85	3240	86	3020	96	106	30	79	4260	81	3490	82	3260	83	3040	84	2830	94	105						
35	82	4760	85	3930	86	3670	87	3420	87	3190	96	106	35	80	4460	83	3680	84	3440	84	3210	85	2980	94	105						
40	84	5040	86	4160	87	3880	88	3620	89	3370	96	106	40	82	4720	84	3890	85	3640	86	3390	86	3150	94	105						
45	85	5350	88	4410	88	4120	89	3840	90	3580	96	106	45	83	5000	85	4120	86	3850	87	3590	87	3340	94	104						
48	86	5550	88	4570	89	4270	90	3980	90	3710	96	106	48	84	5180	86	4270	87	3990	88	3720	88	3460	94	104						

Figure S25-4 (Sheet 7 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
3000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2								
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS										
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-30	89	4380	89	3390	89	3110	89	2840	89	2600	92 105	-30	90	4410	90	3430	90	3150	90	2880	90	2640	91 104								
-25	89	4450	89	3450	89	3160	89	2890	89	2640	92 105	-25	90	4480	90	3490	90	3200	90	2940	90	2690	91 104								
-20	89	4530	89	3510	89	3220	89	2950	89	2700	92 105	-20	89	4560	89	3550	89	3260	89	2990	89	2740	91 104								
-15	89	4610	89	3580	89	3280	89	3010	89	2750	92 105	-15	89	4650	89	3620	89	3320	89	3050	89	2790	91 104								
-10	89	4690	89	3640	89	3340	89	3060	89	2800	92 105	-10	89	4730	89	3680	89	3380	89	3100	89	2840	91 104								
-5	89	4780	89	3710	89	3400	89	3120	89	2850	92 105	-5	89	4810	89	3750	89	3440	89	3160	89	2890	91 104								
0	89	4830	89	3750	89	3440	89	3160	89	2890	92 105	0	89	4860	89	3790	89	3480	89	3200	89	2930	91 104								
5	88	4850	88	3770	88	3460	88	3170	88	2900	92 105	5	88	4880	88	3800	88	3500	88	3210	88	2940	91 103								
10	87	4840	87	3760	87	3450	87	3160	87	2890	92 105	10	88	4860	88	3790	88	3480	88	3200	88	2930	91 103								
15	85	4690	85	3640	85	3340	85	3060	85	2800	92 104	15	86	4700	86	3660	86	3360	86	3090	86	2820	91 103								
20	84	4540	84	3530	84	3230	84	2960	84	2700	92 104	20	84	4550	84	3540	84	3250	84	2980	84	2730	90 102								
25	81	4390	81	3400	81	3120	81	2850	81	2610	92 103	25	82	4390	82	3410	82	3130	82	2870	82	2620	90 102								
30	79	4250	79	3290	80	3060	81	2850	81	2650	92 103	30	79	4240	79	3290	79	3020	79	2760	79	2520	90 101								
35	78	4180	80	3450	81	3220	82	3000	83	2790	92 103	35	77	4090	78	3220	79	3010	79	2800	80	2610	90 101								
40	79	4420	82	3640	82	3400	83	3170	84	2950	92 103	40	77	4130	79	3400	80	3170	81	2960	81	2750	90 101								
45	81	4680	83	3850	84	3600	84	3350	85	3120	92 103	45	78	4370	81	3600	81	3360	82	3130	83	2910	90 101								
48	82	4840	84	3990	85	3730	85	3470	86	3230	92 103	48	79	4520	81	3720	82	3470	83	3240	83	3010	90 101								

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS																	
TEMP		TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP		TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS								
DEG	C			10 KTS	20 KTS	30 KTS	10 KTS		20 KTS	30 KTS															
				V1 DIST	V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST															
-30	90	4460	90	3480	90	3200	90	2940	90	2690	91	105	-30	90	4530	90	3550	90	3270	90	3000	90	2760	92	106
-25	90	4530	90	3540	90	3260	90	2990	90	2740	91	105	-25	90	4600	90	3610	90	3320	90	3060	90	2800	92	106
-20	90	4610	90	3610	90	3320	90	3040	90	2790	91	105	-20	90	4680	90	3670	90	3380	90	3110	90	2850	92	106
-15	90	4690	90	3670	90	3380	90	3100	90	2840	91	105	-15	90	4760	90	3740	90	3440	90	3170	90	2910	92	106
-10	90	4770	90	3740	90	3440	90	3160	90	2890	91	105	-10	90	4840	90	3800	90	3500	90	3220	90	2960	92	106
-5	90	4850	90	3800	90	3500	90	3210	90	2950	91	105	-5	90	4920	90	3870	90	3560	90	3280	90	3010	92	105
0	89	4910	89	3840	89	3530	89	3250	89	2980	91	104	0	90	4970	90	3910	90	3600	90	3310	90	3040	92	105
5	89	4920	89	3850	89	3540	89	3260	89	2990	90	104	5	89	4980	89	3910	89	3610	89	3320	89	3050	91	105
10	88	4890	88	3830	88	3530	88	3240	88	2970	89	103	10	88	4950	88	3890	88	3580	88	3300	88	3030	90	103
15	86	4720	86	3700	86	3400	86	3120	86	2860	89	101	15	86	4760	86	3740	86	3450	86	3170	86	2910	88	101
20	84	4560	84	3570	84	3280	84	3010	84	2750	89	101	20	84	4590	84	3600	84	3320	84	3050	84	2790	87	100
25	82	4390	82	3430	82	3150	82	2890	82	2640	89	100	25	82	4410	82	3460	82	3180	82	2920	82	2670	87	99
30	80	4230	80	3300	80	3030	80	2770	80	2540	88	100	30	80	4240	80	3320	80	3050	80	2800	80	2560	87	99
35	77	4080	77	3180	77	2910	77	2670	77	2430	88	99	35	78	4080	78	3190	78	2930	78	2680	78	2450	86	98
40	75	3940	77	3170	77	2960	78	2760	79	2560	88	99	40	75	3940	75	3070	75	2810	75	2570	76	2380	86	97
45	76	4070	78	3350	79	3130	79	2910	80	2700	88	99	45	73	3800	75	3120	76	2910	77	2710	77	2510	86	97
48	77	4220	79	3470	80	3230	80	3010	81	2800	88	99	48	74	3930	76	3220	77	3010	77	2800	78	2600	86	97

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-30	91 4620	91 3640	91 3360	91 3090	91 2840	93 107	-30	91 4740	91 3760	91 3470	91 3200	91 2940	93 108						
-25	91 4690	91 3700	91 3410	91 3140	91 2890	93 107	-25	91 4810	91 3810	91 3520	91 3250	91 2990	93 108						
-20	90 4770	90 3760	90 3470	90 3200	90 2940	93 107	-20	91 4890	91 3880	91 3580	91 3300	91 3040	93 108						
-15	90 4850	90 3830	90 3530	90 3250	90 2990	93 107	-15	91 4970	91 3940	91 3640	91 3360	91 3100	93 108						
-10	90 4930	90 3890	90 3590	90 3310	90 3040	93 107	-10	91 5050	91 4000	91 3700	91 3420	91 3150	93 108						
-5	90 5010	90 3950	90 3650	90 3360	90 3090	93 107	-5	91 5120	91 4070	91 3760	91 3470	91 3200	93 108						
0	90 5050	90 3990	90 3680	90 3400	90 3130	92 106	0	90 5170	90 4100	90 3790	90 3500	90 3230	93 107						
5	89 5060	89 3990	89 3690	89 3400	89 3130	92 106	5	90 5160	90 4100	90 3790	90 3500	90 3230	92 107						
10	89 5020	89 3960	89 3660	89 3370	89 3100	91 104	10	89 5120	89 4060	89 3750	89 3470	89 3190	91 105						
15	87 4820	87 3800	87 3510	87 3230	87 2970	88 102	15	87 4900	87 3890	87 3590	87 3310	87 3050	89 103						
20	85 4640	85 3650	85 3370	85 3100	85 2840	86 99	20	85 4700	85 3720	85 3430	85 3160	85 2910	87 100						
25	82 4440	82 3500	82 3220	82 2960	82 2710	85 98	25	83 4490	83 3550	83 3270	83 3010	83 2770	84 97						
30	80 4260	80 3350	80 3080	80 2830	80 2590	85 97	30	80 4300	80 3390	80 3120	80 2870	80 2630	83 96						
35	78 4090	78 3210	78 2950	78 2700	78 2470	85 97	35	78 4120	78 3240	78 2980	78 2730	78 2500	82 95						
40	76 3940	76 3080	76 2820	76 2580	76 2360	84 96	40	76 3950	76 3100	76 2840	76 2610	76 2380	82 95						
45	73 3790	73 2950	73 2710	74 2510	74 2330	84 95	45	74 3790	74 2960	74 2720	74 2490	74 2270	82 94						
48	72 3700	73 2990	74 2790	75 2590	75 2410	84 95	48	72 3700	72 2890	72 2650	72 2420	72 2220	82 94						

Figure S25-4 (Sheet 8 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR V2														
	10 KTS	V1 DIST		10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST	10 KTS	V1 DIST			20 KTS	V1 DIST		30 KTS	V1 DIST																					
	V1			V1		V1		V1		V1				V1			V1		V1																				
	KIAS			FT		KIAS		FT		KIAS				FT			KIAS		FT	KIAS	FT	KIAS	FT	KIAS		FT													
-30	88	4540	88	3460	88	3150	88	2870	89	2660	102	112	-30	88	4530	88	3460	88	3150	88	2870	88	2610	101	111														
-25	88	4630	88	3520	88	3210	88	2930	89	2720	102	112	-25	88	4620	88	3520	88	3220	88	2930	88	2660	101	111														
-20	88	4720	88	3600	88	3280	88	2990	89	2780	102	112	-20	88	4710	88	3600	88	3280	88	2990	88	2720	101	111														
-15	88	4820	88	3670	88	3350	88	3050	89	2830	102	112	-15	88	4810	88	3670	88	3350	88	3050	88	2780	101	111														
-10	88	4910	88	3740	88	3410	88	3110	89	2890	102	112	-10	88	4900	88	3740	88	3410	88	3110	88	2830	101	111														
-5	88	5000	88	3810	88	3480	88	3170	89	2950	102	112	-5	88	4990	88	3810	88	3480	88	3170	88	2890	101	111														
0	87	5000	87	3810	87	3490	88	3260	89	3040	102	112	0	87	4990	87	3810	87	3480	87	3170	88	2940	101	111														
5	86	4980	87	3860	88	3610	89	3370	90	3140	102	112	5	86	4970	86	3790	86	3490	87	3260	88	3040	101	111														
10	85	4900	88	4030	89	3770	90	3520	91	3280	102	112	10	85	4880	86	3890	87	3640	88	3400	89	3170	101	111														
15	86	5130	89	4240	90	3970	91	3710	92	3460	102	112	15	84	4950	88	4090	89	3830	90	3580	90	3330	101	111														
20	87	5400	90	4470	91	4180	92	3910	93	3640	102	112	20	86	5210	89	4310	90	4030	91	3770	92	3510	101	111														
25	88	5710	91	4720	92	4410	93	4120	94	3850	102	112	25	87	5500	90	4550	91	4260	92	3980	93	3710	101	111														
30	90	6030	92	4990	93	4670	94	4360	95	4070	102	112	30	88	5810	91	4810	92	4500	93	4200	94	3920	101	111														
35	91	6400	94	5290	94	4950	95	4620	96	4310	102	112	35	90	6160	92	5090	93	4760	94	4450	95	4150	101	111														
37	91	6560	94	5410	95	5060	96	4730	96	4410	102	112	39	91	6470	93	5340	94	5000	95	4670	95	4350	101	111														
39	92	6720	95	5550	95	5190	96	4850	97	4520	102	112	40	91	6550	94	5400	94	5060	95	4720	96	4410	101	111														
													43	92	6800	94	5610	95	5250	96	4900	96	4570	101	111														

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2				
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	20 KTS			30 KTS	10 KTS		V1 DIST	10 KTS	V1 DIST	20 KTS	30 KTS						
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-30	89	4520	89	3460	89	3160	89	2880	89	2620	99	110	-30	89	4520	89	3470	89	3170	89	2890	89	2640	98	109
-25	89	4610	89	3530	89	3220	89	2940	89	2670	99	110	-25	89	4600	89	3530	89	3230	89	2950	89	2690	98	109
-20	88	4700	88	3600	88	3290	88	3000	88	2730	99	110	-20	89	4700	89	3610	89	3300	89	3010	89	2750	98	109
-15	88	4800	88	3670	88	3350	88	3060	88	2790	99	110	-15	89	4790	89	3680	89	3360	89	3070	89	2800	98	109
-10	88	4880	88	3740	88	3420	88	3120	88	2840	99	110	-10	89	4870	89	3740	89	3430	89	3130	89	2860	98	109
-5	88	4970	88	3810	88	3480	88	3180	88	2900	99	110	-5	88	4960	88	3810	88	3490	88	3190	88	2910	98	109
0	87	4970	87	3810	87	3480	87	3180	87	2900	99	110	0	88	4950	88	3810	88	3480	88	3180	88	2910	98	109
5	86	4940	86	3790	86	3460	86	3160	86	2880	99	110	5	87	4930	87	3790	87	3470	87	3170	87	2890	98	108
10	85	4850	85	3720	85	3430	86	3210	87	2990	99	110	10	85	4830	85	3710	85	3400	85	3100	85	2830	98	108
15	83	4710	86	3850	86	3610	87	3370	88	3140	99	110	15	83	4690	83	3630	84	3400	85	3170	86	2950	98	108
20	84	4900	87	4060	88	3800	89	3550	89	3300	99	110	20	82	4620	85	3820	85	3570	86	3330	87	3110	98	108
25	85	5170	88	4280	89	4000	90	3740	90	3480	99	110	25	83	4860	86	4020	87	3760	87	3510	88	3270	98	108
30	86	5470	89	4520	90	4230	91	3950	92	3680	99	110	30	84	5130	87	4240	88	3970	89	3710	89	3450	97	108
35	88	5780	90	4780	91	4470	92	4180	93	3890	99	110	35	86	5430	88	4480	89	4190	90	3920	90	3650	97	108
40	89	6140	92	5070	92	4750	93	4430	94	4130	99	109	40	87	5750	89	4750	90	4440	91	4150	92	3870	97	108
43	90	6370	92	5260	93	4920	94	4600	94	4280	99	109	45	88	6110	91	5050	91	4720	92	4410	93	4110	97	108
45	90	6530	93	5390	93	5040	94	4710	95	4390	99	109	46	89	6190	91	5110	92	4780	92	4470	93	4160	97	108
46	91	6620	93	5460	94	5110	94	4770	95	4450	99	109													

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2				
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	10 KTS			V1 DIST	10 KTS		20 KTS	30 KTS	10 KTS	V1 DIST	10 KTS	20 KTS		30 KTS			
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT
-30	89	4530	89	3490	89	3190	89	2910	89	2660	96	108	-30	89	4540	89	3510	89	3210	89	2940	89	2680	94	106
-25	89	4610	89	3550	89	3250	89	2970	89	2710	96	108	-25	89	4620	89	3570	89	3270	89	2990	89	2730	94	106
-20	89	4700	89	3620	89	3310	89	3030	89	2760	96	108	-20	89	4710	89	3640	89	3340	89	3050	89	2790	94	106
-15	89	4790	89	3690	89	3380	89	3090	89	2820	96	108	-15	89	4800	89	3710	89	3400	89	3110	89	2850	94	106
-10	89	4870	89	3760	89	3440	89	3150	89	2870	96	108	-10	89	4880	89	3780	89	3460	89	3170	89	2900	94	106
-5	89	4960	89	3820	89	3500	89	3200	89	2930	96	108	-5	89	4960	89	3840	89	3520	89	3230	89	2950	94	106
0	88	4950	88	3820	88	3500	88	3200	88	2920	96	107	0	88	4950	88	3830	88	3510	88	3220	88	2940	94	106
5	87	4920	87	3790	87	3470	87	3180	87	2900	96	107	5	87	4920	87	3810	87	3490	87	3200	87	2920	94	106
10	85	4810	85	3710	85	3400	85	3110	85	2840	96	107	10	85	4810	85	3720	85	3410	85	3120	85	2850	94	105
15	83	4670	83	3600	83	3300	83	3010	84	2770	96	106	15	83	4650	83	3600	83	3300	83	3020	83	2760	94	105
20	81	4530	82	3590	83	3360	84	3130	85	2910	96	106	20	81	4510	81	3490	81	3190	82	2930	82	2730	94	105
25	81	4570	84	3770	84	3530	85	3290	86	3070	96	106	25	79	4370	81	3540	82	3310	83	3090	84	2870	94	105
30	82	4820	85	3980	86	3720	86	3470	87	3240	96	106	30	80	4510	82	3730	83	3490	84	3250	85	3030	94	105
35	83	5090	86	4200	87	3930	88	3670	88	3420	96	106	35	81	4760	84	3930	85	3680	85	3430	86	3200	94	105
40	85	5390	87	4450	88	4160	89	3880	89	3620	96	106	40	83	5040	85	4160	86	3890	86	3630	87	3380	94	104
45	86	5720	88	4720	89	4420	90	4120	90	3840	96	106	45	84	5350	86	4410	87	4130	88	3850	88	3590	94	104
46	86	5790	89	4780	89	4470	90	4170	91	3890	96	106	46	84	5410	86	4470	87	4180	88	3900	88	3630	94	104

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
4000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS													
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	90	4560	90	3540	90	3250	90	2970	90	2720	92 105	-30	90	4600	90	3580	90	3290	90	3010	90	2760	91 104
-25	89	4640	89	3600	89	3300	89	3030	89	2770	92 105	-25	90	4680	90	3640	90	3350	90	3070	90	2810	91 104
-20	89	4730	89	3670	89	3370	89	3090	89	2820	92 105	-20	90	4760	90	3710	90	3410	90	3130	90	2870	91 104
-15	89	4820	89	3740	89	3430	89	3150	89	2880	92 105	-15	90	4850	90	3780	90	3480	90	3190	90	2920	91 104
-10	89	4900	89	3810	89	3490	89	3200	89	2930	92 105	-10	90	4930	90	3850	90	3530	90	3240	90	2970	91 104
-5	89	4980	89	3870	89	3550	89	3260	89	2980	92 105	-5	89	5010	89	3910	89	3590	89	3300	89	3030	91 104
0	88	4960	88	3860	88	3540	88	3250	88	2970	92 105	0	89	4990	89	3890	89	3580	89	3290	89	3010	91 104
5	87	4920	87	3830	87	3510	87	3220	87	2950	92 105	5	88	4940	88	3860	88	3550	88	3250	88	2980	91 103
10	86	4810	86	3740	86	3430	86	3140	86	2880	92 104	10	86	4820	86	3760	86	3460	86	3170	86	2900	91 103
15	84	4650	84	3610	84	3310	84	3030	84	2770	92 104	15	84	4650	84	3630	84	3330	84	3050	84	2790	90 102
20	82	4500	82	3490	82	3200	82	2930	82	2670	92 103	20	82	4490	82	3500	82	3210	82	2940	82	2690	90 102
25	79	4350	79	3380	79	3100	80	2890	81	2690	92 103	25	80	4340	80	3380	80	3100	80	2840	80	2590	90 101
30	77	4230	80	3490	81	3260	82	3040	82	2830	92 103	30	78	4200	78	3270	78	3050	79	2840	80	2640	90 101
35	79	4460	81	3680	82	3440	83	3210	83	2980	92 103	35	76	4170	79	3440	80	3210	80	2990	81	2780	90 101
40	80	4710	83	3890	83	3630	84	3390	85	3150	92 103	40	78	4400	80	3630	81	3390	82	3160	82	2940	90 101
45	82	4990	84	4120	85	3850	85	3590	86	3340	92 103	45	79	4660	81	3840	82	3590	83	3340	83	3110	90 101
46	82	5050	84	4170	85	3900	85	3630	86	3380	92 103	46	80	4710	82	3890	82	3630	83	3380	84	3150	90 101

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS													
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	90	4650	90	3640	90	3340	90	3070	90	2810	92 105	-30	91	4720	91	3710	91	3410	91	3140	91	2880	92 106
-25	90	4730	90	3700	90	3400	90	3120	90	2860	92 105	-25	90	4790	90	3770	90	3470	90	3190	90	2930	92 106
-20	90	4810	90	3770	90	3460	90	3180	90	2920	92 105	-20	90	4880	90	3840	90	3530	90	3250	90	2990	92 106
-15	90	4900	90	3840	90	3530	90	3240	90	2980	92 105	-15	90	4970	90	3900	90	3600	90	3310	90	3040	92 106
-10	90	4980	90	3900	90	3590	90	3300	90	3030	92 105	-10	90	5040	90	3970	90	3660	90	3370	90	3090	92 106
-5	90	5060	90	3960	90	3650	90	3350	90	3080	92 105	-5	90	5120	90	4030	90	3720	90	3420	90	3150	92 106
0	89	5030	89	3940	89	3630	89	3330	89	3060	91 104	0	89	5090	89	4000	89	3690	89	3400	89	3120	91 105
5	88	4980	88	3900	88	3590	88	3300	88	3030	89 103	5	88	5030	88	3960	88	3650	88	3360	88	3080	90 104
10	86	4850	86	3790	86	3490	86	3210	86	2940	89 102	10	86	4890	86	3840	86	3540	86	3260	86	2990	88 101
15	84	4670	84	3650	84	3360	84	3080	84	2820	89 101	15	84	4700	84	3690	84	3400	84	3120	84	2860	87 100
20	82	4500	82	3520	82	3230	82	2960	82	2710	89 100	20	82	4520	82	3540	82	3260	82	2990	82	2740	87 99
25	80	4340	80	3390	80	3110	80	2850	80	2610	88 100	25	80	4350	80	3410	80	3130	80	2870	80	2630	87 99
30	78	4190	78	3270	78	3000	78	2740	78	2510	88 99	30	78	4190	78	3280	78	3010	78	2760	78	2520	86 98
35	76	4060	76	3210	77	2990	78	2790	78	2590	88 99	35	76	4050	76	3160	76	2900	76	2650	76	2420	86 98
40	75	4110	78	3380	78	3160	79	2940	80	2730	88 99	40	74	3910	75	3150	76	2940	76	2740	77	2540	86 97
45	77	4340	79	3580	80	3340	80	3110	81	2890	88 99	45	74	4040	76	3320	77	3100	78	2890	78	2680	86 97
46	77	4390	79	3620	80	3380	80	3150	81	2930	88 99	46	74	4080	77	3360	77	3140	78	2920	78	2710	86 97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS													
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		HEADWINDS						VR V2 KIAS
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-30	91	4810	91	3800	91	3500	91	3230	91	2970	93 107	-30	91	4940	91	3920	91	3620	91	3340	91	3080	94 108
-25	91	4890	91	3860	91	3560	91	3280	91	3020	93 107	-25	91	5010	91	3980	91	3670	91	3390	91	3120	94 108
-20	91	4970	91	3930	91	3620	91	3340	91	3070	93 107	-20	91	5090	91	4040	91	3740	91	3450	91	3180	94 108
-15	91	5060	91	4000	91	3690	91	3400	91	3130	93 107	-15	91	5180	91	4110	91	3800	91	3510	91	3240	94 108
-10	90	5130	90	4060	90	3750	90	3450	90	3180	93 107	-10	91	5260	91	4170	91	3860	91	3570	91	3290	94 108
-5	90	5210	90	4120	90	3800	90	3510	90	3230	93 107	-5	91	5330	91	4240	91	3920	91	3620	91	3340	94 108
0	90	5170	90	4090	90	3770	90	3480	90	3200	92 106	0	90	5280	90	4190	90	3880	90	3580	90	3300	93 107
5	88	5100	88	4030	88	3720	88	3430	88	3160	91 104	5	89	5200	89	4130	89	3820	89	3520	89	3250	91 106
10	87	4950	87	3910	87	3600	87	3320	87	3050	89 102	10	87	5030	87	3990	87	3690	87	3400	87	3130	89 103
15	85	4740	85	3740	85	3450	85	3170	85	2910	86 100	15	85	4810	85	3810	85	3510	85	3240	85	2980	87 101
20	83	4550	83	3580	83	3300	83	3030	83	2790	85 98	20	83	4600	83	3640	83	3350	83	3090	83	2840	84 98
25	80	4370	80	3440	80	3160	80	2910	80	2660	85 97	25	81	4410	81	3480	81	3210	81	2950	81	2710	83 96
30	78	4200	78	3300	78	3030	78	2780	78	2550	85 97	30	79	4230	79	3330	79	3070	79	2820	79	2580	82 95
35	76	4050	76	3170	76	2910	76	2670	76	2440	84 96	35	76	4060	76	3190	76	2940	76	2690	76	2470	82 95
40	74	3910	74	3050	74	2800	74	2560	74	2350	84 96	40	74	3910	74	3060	74	2810	74	2580	74	2360	82 94
45	72	3770	73	3080	74	2880	75	2680	75	2490	84 95	45	72	3760	72	2940	72	2700	72	2470	72	2290	82 94
46	72	3800	74	3120	74	2910	75	2700	76	2510	84 95	46	71	3730	71	2920	71	2690	72	2500	73	2320	82 93

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									WEIGHT = 16000 LBS																
VENR = 160 KIAS									VENR = 160 KIAS																
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS											
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS		V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT								
-35	89	4690	89	3570	89	3260	89	2960	102	112	-35	89	4680	89	3570	89	3260	89	2970	101	111				
-30	89	4780	89	3640	89	3320	89	3020	89	2750	102	112	-30	89	4770	89	3640	89	3320	89	3030	89	2750	101	111
-25	89	4870	89	3710	89	3380	89	3080	89	2800	102	112	-25	89	4860	89	3710	89	3380	89	3080	89	2810	101	111
-20	88	4960	88	3770	88	3440	88	3140	89	2860	102	112	-20	89	4940	89	3770	89	3440	89	3140	89	2860	101	111
-15	88	5020	88	3820	88	3490	88	3180	89	2940	102	112	-15	88	5010	88	3820	88	3490	88	3180	88	2900	101	111
-10	87	5050	87	3840	87	3510	88	3250	89	3030	102	112	-10	88	5030	88	3840	88	3510	88	3200	88	2920	101	111
-5	87	5060	87	3850	87	3580	88	3350	89	3120	102	112	-5	87	5040	87	3850	87	3520	87	3230	88	3010	101	111
0	86	5020	87	3970	88	3710	89	3470	90	3230	102	112	0	86	5000	86	3830	87	3590	88	3350	89	3120	101	111
5	84	4980	88	4110	89	3850	90	3600	91	3360	102	112	5	85	4960	86	3970	87	3720	88	3470	89	3240	101	111
10	85	5220	89	4320	90	4040	91	3780	92	3530	102	112	10	84	5030	88	4170	88	3900	89	3650	90	3400	101	111
15	87	5490	90	4550	91	4260	92	3980	93	3710	102	112	15	85	5290	89	4380	90	4110	90	3840	91	3580	101	111
20	88	5790	91	4790	92	4490	93	4190	94	3910	102	112	20	87	5580	90	4620	91	4330	92	4040	92	3770	101	111
25	89	6110	92	5060	93	4740	94	4430	95	4130	102	112	25	88	5890	91	4880	92	4570	93	4270	93	3980	101	111
30	90	6480	93	5360	94	5020	95	4690	96	4380	102	112	30	89	6240	92	5160	93	4830	94	4520	94	4210	101	111
33	91	6710	94	5550	95	5200	95	4860	96	4540	102	112	35	90	6620	93	5470	94	5120	95	4790	95	4470	101	111
35	92	6880	94	5680	95	5320	96	4970	97	4640	102	112	39	91	6950	94	5740	95	5380	95	5030	96	4690	101	111

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS																	
VENR = 160 KIAS								VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	
-35	89	4670	89	3570	89	3260	89	2980	89	2710	99	110	-35	89	4670	89	3580	89	3280	89	2990	89	2730	98	109
-30	89	4760	89	3640	89	3330	89	3030	89	2760	99	110	-30	89	4750	89	3650	89	3340	89	3050	89	2780	98	109
-25	89	4840	89	3710	89	3390	89	3090	89	2820	99	110	-25	89	4840	89	3720	89	3400	89	3100	89	2830	98	109
-20	89	4930	89	3770	89	3450	89	3150	89	2870	99	110	-20	89	4920	89	3780	89	3460	89	3160	89	2880	98	109
-15	88	4990	88	3820	88	3490	88	3190	88	2910	99	110	-15	89	4980	89	3830	89	3500	89	3200	89	2920	98	109
-10	88	5010	88	3840	88	3510	88	3200	88	2920	99	110	-10	88	5000	88	3840	88	3510	88	3210	88	2930	98	109
-5	87	5020	87	3840	87	3510	87	3210	87	2930	99	110	-5	87	5000	87	3840	87	3520	87	3220	87	2940	98	109
0	86	4980	86	3810	86	3490	86	3180	86	2940	99	110	0	86	4960	86	3810	86	3490	86	3190	86	2910	98	108
5	85	4930	85	3780	85	3510	86	3270	87	3050	99	110	5	85	4910	85	3780	85	3460	85	3160	85	2880	98	108
10	83	4810	85	3930	86	3680	87	3430	88	3200	99	110	10	83	4780	83	3700	84	3460	85	3230	86	3010	98	108
15	83	4990	87	4130	87	3860	88	3610	89	3370	99	110	15	81	4690	84	3880	85	3630	86	3390	87	3160	98	108
20	85	5250	88	4340	89	4070	89	3800	90	3550	99	110	20	83	4930	86	4080	86	3820	87	3570	88	3330	98	108
25	86	5540	89	4580	90	4290	91	4010	91	3740	99	110	25	84	5200	87	4300	88	4030	88	3760	89	3510	97	108
30	87	5850	90	4840	91	4530	92	4240	92	3950	99	110	30	85	5490	88	4540	89	4250	89	3970	90	3710	97	108
35	89	6200	91	5130	92	4800	93	4490	93	4190	99	109	35	86	5810	89	4810	90	4500	91	4200	91	3920	97	108
39	90	6510	92	5380	93	5040	93	4710	94	4390	99	109	40	88	6170	90	5100	91	4780	92	4460	92	4160	97	108
40	90	6590	92	5450	93	5100	94	4770	94	4450	99	109	42	88	6320	91	5230	91	4890	92	4570	93	4260	97	108
42	90	6760	93	5590	93	5230	94	4880	95	4560	99	109	44	89	6480	91	5360	92	5010	92	4690	93	4370	97	108

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2						
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT				
-35	90	4670	90	3600	90	3300	90	3010	90	2750	96	108	-35	90	4690	90	3620	90	3320	90	3040	90	2780	94	107						
-30	90	4760	90	3660	90	3360	90	3070	90	2800	96	108	-30	90	4770	90	3690	90	3380	90	3090	90	2830	94	107						
-25	89	4840	89	3730	89	3420	89	3120	89	2850	96	108	-25	90	4850	90	3750	90	3440	90	3150	90	2880	94	106						
-20	89	4920	89	3790	89	3480	89	3180	89	2900	96	108	-20	89	4930	89	3820	89	3500	89	3200	89	2930	94	106						
-15	89	4980	89	3840	89	3520	89	3220	89	2940	96	108	-15	89	4980	89	3860	89	3540	89	3240	89	2960	94	106						
-10	88	4990	88	3850	88	3530	88	3230	88	2950	96	107	-10	88	5000	88	3870	88	3550	88	3250	88	2970	94	106						
-5	87	4990	87	3850	87	3530	87	3230	87	2950	96	107	-5	88	4990	88	3870	88	3550	88	3250	88	2970	94	106						
0	86	4940	86	3820	86	3490	86	3200	86	2920	96	107	0	86	4940	86	3830	86	3510	86	3210	86	2940	94	106						
5	85	4890	85	3780	85	3460	85	3170	85	2890	96	107	5	85	4890	85	3780	85	3470	85	3180	85	2910	94	105						
10	83	4760	83	3670	83	3360	83	3080	83	2830	96	106	10	83	4740	83	3670	83	3370	83	3080	83	2820	94	105						
15	81	4630	82	3650	83	3410	84	3190	85	2970	96	106	15	81	4610	81	3570	81	3270	81	2990	82	2780	94	105						
20	80	4630	83	3830	84	3590	85	3350	86	3120	96	106	20	79	4480	81	3600	82	3360	83	3140	83	2920	94	105						
25	82	4880	85	4040	85	3780	86	3530	87	3290	96	106	25	79	4570	82	3780	83	3540	84	3300	84	3080	94	105						
30	83	5140	86	4260	86	3980	87	3720	88	3470	96	106	30	81	4820	83	3990	84	3730	85	3480	86	3240	94	105						
35	84	5440	87	4500	88	4210	88	3930	89	3670	96	106	35	82	5090	85	4210	85	3940	86	3680	87	3430	94	104						
40	86	5770	88	4770	89	4460	89	4170	90	3890	96	106	40	83	5390	86	4460	87	4170	87	3890	88	3630	94	104						
44	87	6060	89	5010	90	4690	90	4380	91	4080	96	106	44	85	5650	87	4670	87	4370	88	4080	89	3810	94	104						

Figure S25-4 (Sheet 11 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
5000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	90 4710	90 3660	90 3360	90 3070	90 2810	92 105	-35	90 4750	90 3700	90 3400	90 3120	90 2860	92 105
-30	90 4790	90 3720	90 3410	90 3130	90 2860	92 105	-30	90 4830	90 3760	90 3460	90 3170	90 2910	92 105
-25	90 4870	90 3780	90 3470	90 3180	90 2910	92 105	-25	90 4910	90 3830	90 3520	90 3230	90 2960	92 105
-20	90 4950	90 3850	90 3530	90 3240	90 2960	92 105	-20	90 4990	90 3890	90 3570	90 3280	90 3010	92 105
-15	89 5000	89 3890	89 3570	89 3270	89 3000	92 105	-15	90 5030	90 3930	90 3610	90 3310	90 3040	91 104
-10	89 5010	89 3890	89 3570	89 3280	89 3000	92 105	-10	89 5040	89 3930	89 3610	89 3320	89 3040	91 104
-5	88 5000	88 3890	88 3570	88 3270	88 3000	92 105	-5	88 5030	88 3920	88 3610	88 3310	88 3030	91 103
0	87 4950	87 3840	87 3530	87 3240	87 2960	92 104	0	87 4960	87 3870	87 3560	87 3270	87 2990	91 103
5	86 4890	86 3800	86 3490	86 3200	86 2930	92 104	5	86 4900	86 3820	86 3510	86 3220	86 2950	91 103
10	84 4740	84 3680	84 3380	84 3100	84 2830	92 104	10	84 4740	84 3700	84 3400	84 3120	84 2850	90 102
15	82 4600	82 3570	82 3270	82 3000	82 2740	92 103	15	82 4590	82 3580	82 3290	82 3010	82 2750	90 102
20	80 4460	80 3460	80 3170	80 2940	81 2740	92 103	20	80 4450	80 3460	80 3180	80 2910	80 2660	90 101
25	78 4330	80 3540	81 3310	81 3090	82 2870	92 103	25	78 4310	78 3350	78 3090	79 2890	79 2680	90 101
30	78 4510	81 3730	82 3490	83 3250	83 3030	92 103	30	76 4210	79 3480	79 3250	80 3030	81 2820	90 101
35	80 4760	82 3930	83 3680	84 3430	84 3200	92 103	35	77 4440	80 3670	81 3430	81 3200	82 2980	90 101
40	81 5030	84 4160	84 3890	85 3630	85 3380	92 103	40	79 4700	81 3880	82 3630	82 3380	83 3150	90 101
44	82 5280	84 4360	85 4080	86 3810	86 3550	92 103	44	80 4920	82 4060	83 3800	83 3540	84 3300	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	91 4800	91 3760	91 3460	91 3180	91 2910	92 106	-35	91 4880	91 3830	91 3530	91 3250	91 2990	93 107
-30	91 4880	91 3820	91 3520	91 3230	91 2960	92 106	-30	91 4950	91 3900	91 3590	91 3300	91 3040	93 107
-25	90 4960	90 3880	90 3570	90 3280	90 3010	92 106	-25	91 5030	91 3960	91 3650	91 3360	91 3090	93 107
-20	90 5040	90 3940	90 3630	90 3340	90 3060	92 106	-20	91 5110	91 4020	91 3700	91 3410	91 3130	93 107
-15	90 5080	90 3980	90 3660	90 3370	90 3090	92 105	-15	90 5150	90 4050	90 3730	90 3440	90 3160	92 106
-10	89 5080	89 3980	89 3660	89 3370	89 3090	91 104	-10	90 5140	90 4040	90 3730	90 3430	90 3160	92 105
-5	88 5060	88 3970	88 3650	88 3360	88 3080	90 103	-5	89 5120	89 4030	89 3710	89 3420	89 3140	91 104
0	87 4990	87 3910	87 3600	87 3310	87 3040	89 102	0	88 5040	88 3960	88 3650	88 3360	88 3090	89 103
5	86 4920	86 3850	86 3550	86 3260	86 2990	89 102	5	86 4960	86 3900	86 3590	86 3310	86 3040	88 101
10	84 4760	84 3720	84 3420	84 3140	84 2880	89 101	10	84 4780	84 3760	84 3460	84 3180	84 2920	87 100
15	82 4600	82 3600	82 3300	82 3030	82 2780	89 101	15	82 4620	82 3620	82 3330	82 3060	82 2810	87 99
20	80 4450	80 3470	80 3190	80 2930	80 2680	88 100	20	80 4450	80 3490	80 3210	80 2950	80 2700	87 99
25	78 4300	78 3360	78 3080	78 2820	78 2580	88 100	25	78 4300	78 3370	78 3100	78 2840	78 2600	86 98
30	76 4170	76 3250	77 3030	77 2830	78 2630	88 99	30	76 4160	76 3250	76 2980	76 2730	76 2500	86 98
35	75 4150	77 3420	78 3190	79 2980	79 2770	88 99	35	74 4030	74 3180	75 2970	76 2770	76 2570	86 97
40	76 4380	79 3610	79 3370	80 3150	80 2930	88 99	40	74 4070	76 3360	77 3130	77 2920	78 2710	86 97
44	77 4580	80 3780	80 3530	81 3290	81 3060	88 99	44	75 4260	77 3510	78 3280	78 3050	79 2840	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	92 4980	92 3930	92 3630	92 3340	92 3080	94 108	-35	92 5110	92 4060	92 3750	92 3460	92 3190	95 109
-30	91 5050	91 3990	91 3680	91 3400	91 3130	94 108	-30	92 5180	92 4120	92 3810	92 3510	92 3240	95 109
-25	91 5130	91 4050	91 3740	91 3450	91 3170	94 108	-25	92 5250	92 4170	92 3860	92 3570	92 3290	94 109
-20	91 5200	91 4110	91 3790	91 3500	91 3220	94 108	-20	91 5330	91 4230	91 3910	91 3620	91 3340	94 109
-15	91 5240	91 4140	91 3820	91 3530	91 3250	93 107	-15	91 5360	91 4260	91 3940	91 3640	91 3360	94 108
-10	90 5230	90 4130	90 3810	90 3520	90 3240	92 106	-10	90 5340	90 4240	90 3920	90 3620	90 3340	93 107
-5	89 5200	89 4110	89 3790	89 3500	89 3220	91 105	-5	89 5300	89 4210	89 3890	89 3600	89 3320	92 106
0	88 5110	88 4030	88 3720	88 3430	88 3160	90 104	0	88 5200	88 4130	88 3820	88 3520	88 3250	91 105
5	87 5020	87 3960	87 3660	87 3370	87 3100	89 102	5	87 5100	87 4050	87 3740	87 3450	87 3180	89 103
10	85 4830	85 3810	85 3510	85 3230	85 2970	86 100	10	85 4890	85 3880	85 3580	85 3300	85 3040	87 101
15	83 4650	83 3660	83 3370	83 3100	83 2850	85 98	15	83 4700	83 3720	83 3430	83 3160	83 2910	84 98
20	81 4480	81 3520	81 3240	81 2980	81 2730	85 97	20	81 4510	81 3560	81 3290	81 3020	81 2780	83 96
25	79 4310	79 3390	79 3120	79 2860	79 2620	85 97	25	79 4340	79 3420	79 3150	79 2900	79 2660	82 95
30	76 4160	76 3260	76 3000	76 2750	76 2520	84 96	30	77 4180	77 3290	77 3020	77 2780	77 2540	82 95
35	74 4020	74 3140	74 2890	74 2640	74 2420	84 96	35	74 4020	74 3160	74 2900	74 2660	74 2430	82 94
40	72 3880	73 3120	74 2910	74 2710	75 2510	84 95	40	72 3880	72 3040	72 2790	72 2550	72 2330	82 94
44	72 3950	74 3250	75 3030	75 2830	76 2630	84 95	44	70 3770	71 3010	72 2810	73 2610	73 2420	82 93

Figure S25-4 (Sheet 12 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																					
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																
-35	89	4940	89	3760	89	3430	89	3120	89	2840	102	112	-35	89	4930	89	3760	89	3430	89	3130	89	2850	101	112														
-30	89	5030	89	3830	89	3500	89	3190	89	2900	102	112	-30	89	5020	89	3830	89	3500	89	3190	89	2900	101	112														
-25	89	5110	89	3890	89	3550	89	3240	89	2950	102	112	-25	89	5100	89	3890	89	3550	89	3240	89	2950	101	112														
-20	89	5200	89	3960	89	3610	89	3290	89	3000	102	112	-20	89	5180	89	3950	89	3610	89	3290	89	3000	101	111														
-15	88	5170	88	3940	88	3600	88	3290	89	3070	102	112	-15	88	5160	88	3940	88	3600	88	3280	88	2990	101	111														
-10	86	5130	86	3910	87	3660	88	3420	89	3190	102	112	-10	87	5110	87	3900	87	3570	87	3300	88	3080	101	111														
-5	85	5080	87	4060	88	3800	89	3560	90	3320	102	112	-5	85	5060	86	3920	87	3680	88	3430	89	3200	101	111														
0	84	5100	88	4220	89	3960	90	3700	91	3450	102	112	0	84	5000	87	4080	88	3820	89	3570	90	3330	101	111														
5	85	5320	89	4410	90	4130	91	3860	91	3610	102	112	5	84	5130	87	4260	88	3990	89	3730	90	3480	101	111														
10	86	5590	90	4640	91	4340	92	4060	92	3790	102	112	10	85	5390	89	4470	89	4190	90	3920	91	3660	101	111														
15	88	5880	91	4880	92	4570	93	4280	93	3990	102	112	15	86	5670	90	4700	90	4410	91	4120	92	3850	101	111														
20	89	6210	92	5150	93	4820	94	4510	94	4210	102	112	20	88	5980	91	4960	92	4640	92	4340	93	4060	101	111														
25	90	6570	93	5440	94	5090	95	4760	95	4450	102	112	25	89	6320	92	5240	93	4910	93	4590	94	4280	101	111														
29	91	6880	94	5700	95	5330	95	4990	96	4660	102	112	30	90	6700	93	5550	94	5190	94	4860	95	4540	101	111														
30	91	6960	94	5760	95	5400	96	5050	96	4710	102	112	31	90	6780	93	5610	94	5260	95	4920	95	4590	101	111														
31	91	7050	94	5830	95	5460	96	5110	96	4770	102	112	35	91	7120	94	5890	95	5520	95	5160	96	4810	101	111														

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2														
	10 KTS				10 KTS		20 KTS		30 KTS					10 KTS				10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT										
-35	90	4910	90	3760	90	3440	90	3140	90	2860	99	110	-35	90	4910	90	3770	90	3450	90	3150	90	2880	98	109	-35	90	4910	90	3770	90	3450	90	3150	90	2880	98	109	
-30	90	5010	90	3830	90	3500	90	3200	90	2920	99	110	-30	90	5000	90	3840	90	3510	90	3210	90	2930	98	109	-30	90	5000	90	3840	90	3510	90	3210	90	2930	98	109	
-25	89	5090	89	3890	89	3560	89	3250	89	2960	99	110	-25	89	5080	89	3900	89	3570	89	3260	89	2980	98	109	-25	89	5080	89	3900	89	3570	89	3260	89	2980	98	109	
-20	89	5160	89	3950	89	3610	89	3300	89	3010	99	110	-20	89	5150	89	3960	89	3620	89	3310	89	3030	98	109	-20	89	5150	89	3960	89	3620	89	3310	89	3030	98	109	
-15	88	5140	88	3930	88	3600	88	3290	88	3000	99	110	-15	88	5120	88	3940	88	3600	88	3290	88	3010	98	109	-15	88	5120	88	3940	88	3600	88	3290	88	3010	98	109	
-10	87	5090	87	3900	87	3560	87	3260	87	2970	99	110	-10	87	5070	87	3900	87	3570	87	3260	87	2980	98	108	-10	87	5070	87	3900	87	3570	87	3260	87	2980	98	108	
-5	85	5030	85	3860	85	3530	86	3240	86	3020	99	110	-5	86	5010	86	3850	86	3530	86	3220	86	2940	98	108	-5	86	5010	86	3850	86	3530	86	3220	86	2940	98	108	
0	84	4970	84	3840	85	3600	86	3360	87	3140	99	110	0	84	4950	84	3810	84	3480	84	3180	85	2950	98	108	0	84	4950	84	3810	84	3480	84	3180	85	2950	98	108	
5	83	4890	85	4010	86	3750	87	3510	88	3270	99	110	5	83	4860	83	3770	84	3530	85	3300	86	3080	98	108	5	83	4860	83	3770	84	3530	85	3300	86	3080	98	108	
10	83	5080	86	4210	87	3940	88	3680	89	3440	99	110	10	81	4770	84	3960	85	3700	86	3460	87	3230	98	108	10	81	4770	84	3960	85	3700	86	3460	87	3230	98	108	
15	85	5330	88	4420	88	4140	89	3870	90	3610	99	110	15	82	5010	85	4150	86	3890	87	3640	88	3390	98	108	15	82	5010	85	4150	86	3890	87	3640	88	3390	98	108	
20	86	5620	89	4660	89	4360	90	4080	91	3810	99	110	20	84	5270	86	4370	87	4090	88	3830	89	3570	97	108	20	84	5270	86	4370	87	4090	88	3830	89	3570	97	108	
25	87	5930	90	4910	91	4600	91	4310	92	4020	99	110	25	85	5560	88	4610	88	4320	89	4040	90	3770	97	108	25	85	5560	88	4610	88	4320	89	4040	90	3770	97	108	
30	88	6280	91	5200	92	4870	92	4550	93	4250	99	109	30	86	5880	89	4870	89	4560	90	4270	91	3980	97	108	30	86	5880	89	4870	89	4560	90	4270	91	3980	97	108	
35	89	6660	92	5520	93	5160	93	4830	94	4510	99	109	35	87	6230	90	5160	91	4840	91	4520	92	4220	97	108	35	87	6230	90	5160	91	4840	91	4520	92	4220	97	108	
38	90	6910	93	5720	93	5360	94	5010	95	4680	99	109	38	88	6460	90	5350	91	5010	92	4690	92	4370	97	108	38	88	6460	90	5350	91	5010	92	4690	92	4370	97	108	
													40	89	6620	91	5480	92	5130	92	4800	93	4480	97	108	40	89	6620	91	5480	92	5130	92	4800	93	4480	97	108	
													42	89	6790	91	5620	92	5260	93	4920	93	4600	97	108	42	89	6790	91	5620	92	5260	93	4920	93	4600	97	108	

WEIGHT = 14500 LBS								VENR = 160 KIAS								WEIGHT = 14000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2						
	10 KTS				10 KTS		20 KTS		30 KTS					10 KTS				10 KTS		20 KTS		30 KTS									
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	90	4910	90	3790	90	3470	90	3170	90	2900	96	108	-35	90	4930	90	3810	90	3500	90	3200	90	2930	94	107	94	107				
-30	90	5000	90	3860	90	3530	90	3230	90	2950	96	108	-30	90	5010	90	3880	90	3560	90	3260	90	2980	94	107	94	107				
-25	90	5080	90	3910	90	3590	90	3280	90	3000	96	108	-25	90	5090	90	3940	90	3610	90	3310	90	3030	94	107	94	107				
-20	89	5150	89	3970	89	3640	89	3330	89	3050	96	108	-20	90	5160	90	3990	90	3660	90	3360	90	3070	94	107	94	107				
-15	88	5120	88	3950	88	3620	88	3310	88	3030	96	108	-15	89	5120	89	3960	89	3640	89	3330	89	3050	94	106	94	106				
-10	87	5060	87	3900	87	3580	87	3270	87	2990	96	107	-10	87	5060	87	3920	87	3590	87	3290	87	3010	94	106	94	106				
-5	86	4990	86	3850	86	3530	86	3230	86	2950	96	107	-5	86	4990	86	3860	86	3540	86	3250	86	2970	94	106	94	106				
0	85	4930	85	3800	85	3480	85	3190	85	2910	96	107	0	85	4920	85	3810	85	3490	85	3200	85	2920	94	105	94	105				
5	83	4840	83	3740	83	3420	83	3130	83	2890	96	106	5	83	4820	83	3740	83	3430	83	3140	83	2870	94	105	94	105				
10	81	4720	82	3720	83	3480	84	3250	84	3030	96	106	10	81	4700	81	3640	81	3330	81	3050	82	2840	94	105	94	105				
15	80	4710	83	3900	84	3650	85	3410	86	3180	96	106	15	79	4580	81	3660	82	3420	82	3200	83	2980	94	105	94	105				
20	81	4950	84	4100	85	3840	86	3590	87	3350	96	106	20	79	4640	82	3840	83	3600	84	3360	84	3130	94	105	94	105				
25	83	5210	85	4320	86	4040	87	3780	88	3530	96	106	25	81	4880	83	4040	84	3780	85	3540	85	3300	94	105	94	105				
30	84	5510	87	4560	87	4270	88	3990	89	3720	96	106	30	82	5150	84	4270	85	3990	86	3730	86	3480	94	104	94	104				
35	85	5830	88	4830	88	4520	89	4230	90	3940	96	106	35	83	5450	85	4510	86	4220	87	3950	87	3680	94	104	94	104				
40	87	6190	89	5120	89	4800	90	4480	91	4180	96	106	40	84	5770	87	4780	87	4480	88	4180	88	3900	94	104	94	104				
42	87	6340	89	5250	90	4920	90	4600	91	4290	96	106	42	85	5920	87	4900	88	4580	88	4280	89	3990	94	104	94	104				

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
6000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT													
-35	91 4950	91 3850	91 3530	91 3240	91 2970	92 105		-35	91 4990	91 3890	91 3580	91 3290	91 3010	93 106																	
-30	90 5040	90 3910	90 3590	90 3300	90 3020	92 105		-30	91 5080	91 3960	91 3640	91 3340	91 3070	92 106																	
-25	90 5110	90 3970	90 3650	90 3340	90 3060	92 105		-25	90 5140	90 4010	90 3690	90 3390	90 3110	92 105																	
-20	90 5180	90 4020	90 3700	90 3390	90 3110	92 105		-20	90 5210	90 4070	90 3740	90 3440	90 3150	92 105																	
-15	89 5130	89 3990	89 3660	89 3360	89 3080	92 105		-15	89 5160	89 4030	89 3700	89 3400	89 3120	91 104																	
-10	88 5060	88 3940	88 3620	88 3320	88 3040	92 105		-10	88 5090	88 3970	88 3650	88 3350	88 3070	91 103																	
-5	86 4990	86 3880	86 3560	86 3270	86 2990	92 104		-5	87 5000	87 3910	87 3590	87 3300	87 3020	91 103																	
0	85 4910	85 3820	85 3510	85 3220	85 2940	92 104		0	85 4920	85 3840	85 3530	85 3240	85 2970	90 103																	
5	83 4810	83 3740	83 3440	83 3150	83 2880	92 104		5	84 4820	84 3760	84 3450	84 3170	84 2900	90 102																	
10	82 4680	82 3640	82 3340	82 3060	82 2800	92 103		10	82 4680	82 3650	82 3350	82 3070	82 2810	90 102																	
15	80 4560	80 3540	80 3250	80 2990	81 2790	92 103		15	80 4540	80 3540	80 3250	80 2980	80 2720	90 101																	
20	78 4430	79 3600	80 3360	81 3140	82 2930	92 103		20	78 4420	78 3440	78 3150	78 2930	79 2730	90 101																	
25	78 4570	81 3780	82 3540	82 3300	83 3080	92 103		25	76 4290	78 3530	79 3300	80 3080	80 2870	90 101																	
30	80 4810	82 3980	83 3730	83 3480	84 3250	92 103		30	77 4490	80 3720	80 3480	81 3250	82 3020	90 101																	
35	81 5090	83 4210	84 3940	85 3680	85 3430	92 103		35	78 4740	81 3920	81 3670	82 3430	83 3190	90 101																	
40	82 5390	84 4460	85 4170	86 3900	86 3630	92 103		40	80 5020	82 4150	83 3880	83 3630	84 3380	90 101																	
42	83 5510	85 4560	85 4270	86 3990	87 3720	92 103		42	80 5140	82 4250	83 3970	84 3710	84 3460	90 101																	

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS																																																																																																																																																																																																															
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																																																																																																																																																																																																																										
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																																																																																																																																																																																																																												
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																																																																																																																																																																																																																											
-35	91 5050	91 3950	91 3640	91 3350	91 3070	93 107	-35	92 5130	92 4030	92 3720	92 3420	92 3150	94 108	-30	91 5130	91 4020	91 3700	91 3400	91 3130	93 107	-30	91 5210	91 4100	91 3780	91 3480	91 3200	94 108	-25	91 5200	91 4070	91 3750	91 3450	91 3170	93 106	-25	91 5270	91 4150	91 3820	91 3520	91 3240	93 107	-20	90 5260	90 4120	90 3800	90 3490	90 3210	93 106	-20	91 5330	91 4200	91 3870	91 3570	91 3280	93 107	-15	89 5200	89 4080	89 3750	89 3450	89 3170	91 105	-15	90 5270	90 4140	90 3820	90 3520	90 3240	92 106	-10	88 5120	88 4010	88 3690	88 3400	88 3120	90 103	-10	88 5170	88 4070	88 3750	88 3460	88 3180	90 104	-5	87 5030	87 3940	87 3630	87 3340	87 3060	89 102	-5	87 5080	87 3990	87 3680	87 3390	87 3110	89 102	0	85 4940	85 3870	85 3560	85 3270	85 3000	89 101	0	86 4980	86 3910	86 3610	86 3320	86 3050	87 101	5	84 4830	84 3780	84 3480	84 3200	84 2930	89 101	5	84 4860	84 3820	84 3520	84 3230	84 2970	87 100	10	82 4680	82 3660	82 3370	82 3090	82 2830	89 101	10	82 4700	82 3690	82 3400	82 3120	82 2860	87 99	15	80 4540	80 3550	80 3260	80 2990	80 2740	88 100	15	80 4550	80 3570	80 3280	80 3020	80 2760	87 99	20	78 4410	78 3440	78 3160	78 2900	78 2650	88 100	20	78 4410	78 3450	78 3170	78 2910	78 2670	86 98	25	76 4280	76 3340	76 3080	77 2870	78 2670	88 99	25	76 4270	76 3340	76 3070	76 2810	76 2570	86 98	30	74 4190	77 3460	78 3240	78 3020	79 2810	88 99	30	74 4130	74 3230	75 3010	76 2810	76 2610	86 97	35	76 4420	78 3650	79 3420	80 3190	80 2970	88 99	35	73 4110	76 3390	76 3170	77 2960	78 2750	86 97	40	77 4670	79 3860	80 3610	81 3370	81 3140	88 99	40	75 4340	77 3580	78 3350	78 3120	79 2910	86 97	42	78 4780	80 3950	81 3690	81 3450	82 3210	88 99	42	75 4440	77 3670	78 3430	79 3190	79 2970	86 97

WEIGHT = 11500 LBS										VENR = 160 KIAS				WEIGHT = 11000 LBS										VENR = 160 KIAS																	
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR VZ KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR VZ KIAS																						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																								
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																							
-35	92 5230	92 4130	92 3820	92 3520	92 3240	95 109	-35	92 5370	92 4270	92 3950	92 3650	92 3360	95 110	-30	92 5310	92 4200	92 3880	92 3580	92 3290	94 109	-30	92 5440	92 4330	92 4000	92 3700	92 3420	95 110	-25	91 5370	91 4250	91 3920	91 3620	91 3330	94 108	-25	92 5500	92 4370	92 4050	92 3740	92 3450	95 109
-20	91 5430	91 4290	91 3970	91 3660	91 3370	94 108	-20	92 5560	92 4420	92 4090	92 3780	92 3490	95 109	-15	90 5350	90 4230	90 3910	90 3600	90 3320	93 107	-15	90 5470	90 4350	90 4020	90 3710	90 3430	93 108	-10	89 5250	89 4150	89 3830	89 3530	89 3250	91 105	-10	89 5350	89 4250	89 3930	89 3630	89 3350	92 106
-5	87 5140	87 4060	87 3750	87 3460	87 3180	90 103	-5	88 5230	88 4150	88 3840	88 3540	88 3270	90 104	0	86 5030	86 3970	86 3670	86 3380	86 3110	88 102	0	86 5110	86 4050	86 3740	86 3460	86 3180	89 103	5	84 4900	84 3870	84 3570	84 3280	84 3020	86 100	5	85 4960	85 3930	85 3630	85 3350	85 3090	87 100
10	83 4730	83 3730	83 3440	83 3160	83 2910	85 98	10	83 4780	83 3780	83 3490	83 3220	83 2960	84 98	15	81 4570	81 3600	81 3310	81 3050	81 2800	85 97	15	81 4610	81 3640	81 3360	81 3090	81 2840	83 96	20	79 4420	79 3470	79 3200	79 2940	79 2690	85 97	20	79 4440	79 3510	79 3230	79 2970	79 2730	82 95
25	77 4270	77 3350	77 3080	77 2830	77 2590	84 96	25	77 4280	77 3380	77 3110	77 2860	77 2620	82 95	30	75 4130	75 3230	75 2970	75 2720	75 2490	84 96	30	75 4130	75 3250	75 2990	75 2740	75 2510	82 94	35	72 3990	73 3150	73 2940	74 2740	75 2550	84 95	35	73 3990	73 3130	73 2870	73 2630	73 2410	82 94
40	72 4030	74 3320	75 3100	75 2890	76 2690	84 95	40	71 3850	71 3070	72 2870	72 2670	73 2480	82 93	42	73 4120	75 3390	75 3170	76 2960	76 2750	84 95	42	70 3810	72 3140	72 2930	73 2730	73 2530	82 93														

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS													
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS		
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST							V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT		
-35	89	5090	89	3870	89	3530	89	3220	89	2930	102 112	-35	89	5070	89	3870	89	3530	89	3220	89	2940	101 112
-30	88	5120	88	3900	88	3560	88	3250	88	2970	102 112	-30	88	5110	88	3900	88	3560	88	3250	88	2960	101 111
-25	88	5150	88	3920	88	3580	88	3290	88	3070	102 112	-25	88	5130	88	3920	88	3580	88	3270	88	2980	101 111
-20	87	5160	87	3940	87	3640	88	3400	89	3170	102 112	-20	87	5150	87	3930	87	3590	87	3280	88	3060	101 111
-15	86	5130	87	4030	88	3780	89	3530	90	3290	102 112	-15	86	5110	86	3900	87	3650	87	3410	88	3180	101 111
-10	84	5090	87	4190	88	3920	89	3670	90	3420	102 112	-10	85	5070	86	4040	87	3790	88	3540	89	3300	101 111
-5	85	5250	88	4350	89	4080	90	3820	91	3560	102 112	-5	84	5070	87	4200	88	3940	89	3680	90	3440	101 111
0	85	5460	89	4530	90	4240	91	3970	92	3710	102 112	0	84	5270	88	4370	89	4090	89	3830	90	3580	101 111
5	86	5710	90	4740	91	4440	92	4160	92	3880	102 112	5	85	5510	88	4570	89	4290	90	4010	91	3740	101 111
10	87	6000	91	4980	92	4670	92	4370	93	4080	102 112	10	86	5780	89	4800	90	4500	91	4210	92	3930	101 111
15	88	6320	92	5250	93	4910	93	4600	94	4300	102 112	15	87	6090	90	5050	91	4730	92	4430	93	4140	101 111
20	90	6670	93	5540	94	5190	94	4860	95	4540	102 112	20	88	6420	91	5330	92	4990	93	4670	94	4370	101 111
25	90	7100	94	5860	94	5490	95	5140	96	4800	102 112	25	90	6800	92	5640	93	5280	94	4940	95	4620	101 111
27	90	7340	94	6000	95	5620	96	5260	96	4910	102 112	27	90	6960	93	5770	94	5410	94	5060	95	4730	101 111
												30	91	7220	94	5980	94	5600	95	5240	96	4900	101 111
												31	91	7320	94	6050	94	5670	95	5300	96	4960	101 111

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-35	89 5060	89 3870	89 3540	89 3230	89 2950	99 110	-35	89 5050	89 3880	89 3550	89 3250	89 2960	98 109						
-30	89 5090	89 3900	89 3560	89 3250	89 2970	99 110	-30	89 5080	89 3900	89 3570	89 3260	89 2980	98 109						
-25	88 5110	88 3920	88 3580	88 3270	88 2980	99 110	-25	88 5100	88 3920	88 3590	88 3280	88 2990	98 109						
-20	87 5120	87 3920	87 3590	87 3280	87 2990	99 110	-20	87 5100	87 3920	87 3590	87 3280	87 3000	98 109						
-15	86 5080	86 3900	86 3560	86 3250	86 3000	99 110	-15	86 5060	86 3890	86 3560	86 3260	86 2970	98 108						
-10	85 5040	85 3870	85 3570	86 3340	87 3110	99 110	-10	85 5020	85 3860	85 3530	85 3230	85 2950	98 108						
-5	83 4990	85 3960	86 3710	87 3470	88 3230	99 110	-5	84 4960	84 3820	84 3500	84 3260	85 3040	98 108						
0	82 4960	85 4110	86 3850	87 3600	88 3360	99 110	0	82 4910	83 3870	84 3630	85 3390	86 3160	98 108						
5	83 5190	86 4300	87 4030	88 3770	89 3520	99 110	5	81 4870	84 4040	85 3790	86 3540	87 3310	98 108						
10	84 5440	87 4510	88 4230	89 3960	90 3690	99 110	10	82 5110	85 4240	86 3970	87 3710	88 3470	98 108						
15	85 5710	88 4740	89 4450	90 4160	91 3880	99 110	15	83 5360	86 4450	87 4170	88 3900	89 3640	97 108						
20	87 6030	89 5000	90 4690	91 4390	92 4100	99 110	20	85 5650	87 4690	88 4390	89 4110	90 3840	97 108						
25	88 6370	91 5280	91 4950	92 4630	93 4330	99 109	25	86 5960	88 4950	89 4640	90 4340	91 4050	97 108						
30	89 6750	92 5600	92 5250	93 4910	94 4590	99 109	30	87 6320	90 5240	90 4910	91 4590	92 4290	97 108						
31	89 6830	92 5660	93 5310	93 4970	94 4640	99 109	34	88 6620	90 5490	91 5140	92 4810	92 4500	97 108						
34	90 7090	92 5870	93 5500	94 5150	94 4810	99 109	35	88 6700	91 5560	91 5210	92 4870	93 4550	97 108						
							38	89 6960	91 5760	92 5400	93 5050	93 4720	97 108						

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	
			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	
-35	90 5050	90 3890	90 3570	90 3260	90 2980	96 108			-35	90 5060	90 3920	90 3590	90 3290	90 3010	94 107				
-30	89 5070	89 3910	89 3590	89 3280	89 3000	96 108			-30	89 5080	89 3930	89 3610	89 3310	89 3020	94 106				
-25	88 5090	88 3930	88 3600	88 3290	88 3010	96 108			-25	89 5090	89 3940	89 3620	89 3310	89 3030	94 106				
-20	87 5090	87 3930	87 3600	87 3300	87 3010	96 107			-20	88 5090	88 3940	88 3620	88 3310	88 3030	94 106				
-15	86 5050	86 3890	86 3570	86 3270	86 2980	96 107			-15	86 5040	86 3900	86 3580	86 3280	86 3000	94 106				
-10	85 5000	85 3860	85 3540	85 3230	85 2960	96 107			-10	85 4990	85 3860	85 3540	85 3250	85 2970	94 105				
-5	84 4940	84 3820	84 3500	84 3200	84 2920	96 106			-5	84 4930	84 3820	84 3500	84 3210	84 2930	94 105				
0	83 4880	83 3770	83 3460	83 3180	84 2970	96 106			0	83 4870	83 3770	83 3460	83 3170	83 2890	94 105				
5	81 4790	82 3800	83 3560	84 3320	85 3100	96 106			5	81 4770	81 3700	81 3390	81 3120	82 2910	94 105				
10	80 4790	83 3980	84 3720	85 3480	85 3250	96 106			10	79 4660	81 3730	81 3490	82 3260	83 3040	94 105				
15	81 5030	84 4170	85 3910	86 3660	86 3410	96 106			15	79 4720	82 3910	83 3660	83 3420	84 3190	94 105				
20	82 5290	85 4390	86 4120	87 3850	87 3590	96 106			20	80 4960	83 4110	84 3850	84 3600	85 3360	94 105				
25	84 5580	86 4630	87 4340	88 4060	88 3790	96 106			25	82 5220	84 4330	85 4060	86 3790	86 3540	94 104				
30	85 5900	87 4900	88 4590	89 4290	89 4010	96 106			30	83 5520	85 4580	86 4290	87 4010	87 3740	94 104				
35	86 6260	89 5190	89 4870	90 4550	90 4250	96 106			35	84 5840	86 4840	87 4540	88 4240	88 3960	94 104				
38	87 6490	89 5380	90 5040	90 4710	91 4400	96 106			40	85 6200	87 5140	88 4810	89 4500	89 4200	94 104				
40	87 6650	90 5510	90 5160	91 4830	91 4510	96 106													

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
7000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							WEIGHT = 13000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	90 5080	90 3950	90 3630	90 3330	90 3050	92 105	-35	90 5120	90 3990	90 3670	90 3370	90 3090	92 105
-30	89 5100	89 3960	89 3640	89 3340	89 3060	92 105	-30	90 5130	90 4000	90 3680	90 3380	90 3100	91 105
-25	89 5110	89 3970	89 3650	89 3340	89 3060	92 105	-25	89 5130	89 4010	89 3680	89 3380	89 3100	91 104
-20	88 5100	88 3970	88 3640	88 3340	88 3060	92 105	-20	88 5120	88 4000	88 3680	88 3380	88 3100	91 103
-15	87 5050	87 3920	87 3600	87 3300	87 3030	92 104	-15	87 5060	87 3950	87 3630	87 3330	87 3060	91 103
-10	86 4990	86 3880	86 3560	86 3260	86 2990	92 104	-10	86 5000	86 3900	86 3580	86 3290	86 3020	91 103
-5	84 4920	84 3830	84 3510	84 3220	84 2950	92 104	-5	84 4930	84 3840	84 3530	84 3240	84 2970	90 103
0	83 4860	83 3780	83 3470	83 3180	83 2910	92 104	0	83 4850	83 3790	83 3480	83 3190	83 2930	90 102
5	81 4750	81 3690	81 3390	81 3110	81 2840	92 103	5	82 4740	82 3700	82 3400	82 3120	82 2860	90 102
10	80 4640	80 3610	80 3310	80 3050	81 2850	92 103	10	80 4630	80 3610	80 3310	80 3040	80 2780	90 101
15	78 4530	79 3660	80 3420	81 3200	82 2980	92 103	15	78 4510	78 3510	78 3220	78 2990	79 2780	90 101
20	78 4640	81 3840	81 3600	82 3360	83 3130	92 103	20	76 4390	78 3590	79 3360	80 3140	80 2920	90 101
25	79 4880	82 4050	82 3790	83 3540	84 3300	92 103	25	77 4550	79 3770	80 3530	81 3300	81 3070	90 101
30	80 5150	83 4270	84 4000	84 3740	85 3490	92 103	30	78 4800	80 3980	81 3720	82 3480	82 3240	90 101
35	82 5450	84 4520	85 4230	85 3950	86 3690	92 103	35	79 5070	82 4200	82 3940	83 3680	84 3430	90 101
40	83 5770	85 4780	86 4480	86 4190	87 3910	92 103	40	81 5380	83 4450	83 4170	84 3890	85 3630	90 101

WEIGHT = 12500 LBS							WEIGHT = 12000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	91 5170	91 4050	91 3730	91 3430	91 3150	93 106	-35	91 5240	91 4120	91 3800	91 3500	91 3220	93 107
-30	90 5180	90 4060	90 3730	90 3430	90 3150	92 105	-30	90 5240	90 4130	90 3800	90 3500	90 3220	93 106
-25	89 5180	89 4060	89 3730	89 3430	89 3150	91 105	-25	90 5240	90 4120	90 3800	90 3500	90 3220	92 105
-20	88 5160	88 4040	88 3720	88 3420	88 3140	90 104	-20	89 5220	89 4100	89 3780	89 3490	89 3210	91 104
-15	87 5090	87 3990	87 3670	87 3380	87 3100	89 102	-15	88 5140	88 4040	88 3730	88 3430	88 3150	89 103
-10	86 5020	86 3930	86 3620	86 3330	86 3050	89 102	-10	86 5060	86 3980	86 3670	86 3370	86 3100	88 101
-5	85 4940	85 3870	85 3560	85 3270	85 3000	89 101	-5	85 4970	85 3910	85 3600	85 3310	85 3050	87 100
0	83 4860	83 3810	83 3500	83 3220	83 2950	89 101	0	84 4890	84 3840	84 3540	84 3260	84 2990	87 100
5	82 4750	82 3720	82 3420	82 3140	82 2880	89 100	5	82 4760	82 3740	82 3440	82 3170	82 2910	87 99
10	80 4620	80 3620	80 3330	80 3050	80 2790	88 100	10	80 4630	80 3630	80 3350	80 3070	80 2820	87 99
15	78 4500	78 3520	78 3230	78 2960	78 2710	88 100	15	78 4500	78 3530	78 3240	78 2980	78 2730	86 98
20	76 4370	76 3420	76 3140	77 2920	78 2720	88 99	20	77 4360	77 3420	77 3140	77 2880	77 2640	86 98
25	74 4250	77 3520	77 3290	78 3070	79 2860	88 99	25	75 4240	75 3310	75 3060	75 2850	76 2660	86 97
30	76 4470	78 3700	79 3460	79 3230	80 3010	88 99	30	73 4160	75 3440	76 3220	77 3000	77 2790	86 97
35	77 4720	79 3910	80 3660	80 3420	81 3180	88 99	35	74 4390	77 3630	77 3390	78 3170	78 2950	86 97
40	78 4990	80 4130	81 3870	82 3610	82 3370	88 99	40	76 4640	78 3830	78 3590	79 3350	80 3120	86 97

WEIGHT = 11500 LBS							WEIGHT = 11000 LBS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS			VR V2 KIAS
			10 KTS	20 KTS	30 KTS					10 KTS	20 KTS	30 KTS	
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	91 5340	91 4220	91 3900	91 3600	91 3310	94 108	-35	92 5470	92 4350	92 4020	92 3720	92 3430	95 109
-30	91 5330	91 4220	91 3900	91 3590	91 3310	93 107	-30	91 5460	91 4340	91 4010	91 3710	91 3420	94 108
-25	90 5320	90 4210	90 3890	90 3590	90 3300	93 107	-25	90 5440	90 4320	90 4000	90 3690	90 3410	93 108
-20	89 5290	89 4180	89 3860	89 3560	89 3280	92 105	-20	89 5400	89 4290	89 3970	89 3660	89 3380	92 107
-15	88 5200	88 4110	88 3800	88 3500	88 3220	90 104	-15	88 5300	88 4210	88 3890	88 3590	88 3310	91 105
-10	87 5120	87 4040	87 3730	87 3440	87 3160	89 102	-10	87 5200	87 4120	87 3810	87 3520	87 3240	89 103
-5	85 5020	85 3960	85 3660	85 3370	85 3100	87 101	-5	86 5090	86 4040	86 3730	86 3440	86 3170	88 102
0	84 4930	84 3890	84 3590	84 3300	84 3040	86 99	0	84 4990	84 3950	84 3650	84 3370	84 3100	86 100
5	82 4790	82 3780	82 3480	82 3210	82 2950	85 98	5	83 4840	83 3830	83 3540	83 3260	83 3000	84 98
10	81 4650	81 3660	81 3380	81 3110	81 2850	85 97	10	81 4690	81 3710	81 3420	81 3150	81 2900	83 96
15	79 4510	79 3550	79 3270	79 3000	79 2750	85 97	15	79 4530	79 3580	79 3300	79 3040	79 2790	82 95
20	77 4370	77 3430	77 3160	77 2900	77 2660	84 96	20	77 4380	77 3450	77 3180	77 2930	77 2680	82 95
25	75 4230	75 3320	75 3050	75 2800	75 2560	84 96	25	75 4230	75 3330	75 3070	75 2820	75 2580	82 94
30	73 4100	73 3210	73 2980	74 2780	74 2590	84 95	30	73 4090	73 3220	73 2960	73 2710	73 2480	82 94
35	72 4070	74 3360	74 3140	75 2930	76 2730	84 95	35	71 3960	71 3110	72 2900	72 2710	73 2520	82 93
40	73 4300	75 3550	76 3320	76 3090	77 2880	84 95	40	70 3970	72 3280	73 3060	73 2850	74 2650	82 93

Figure S25-4 (Sheet 16 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR VZ	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR VZ																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-35	88	5200	88	3960	88	3610	88	3290	88	3040	102	112	-35	88	5180	88	3950	88	3610	88	3290	88	3000	101	111														
-30	87	5170	87	3940	87	3620	88	3380	89	3160	102	112	-30	87	5150	87	3930	87	3590	87	3280	88	3050	101	111														
-25	86	5140	87	4010	88	3760	89	3510	90	3280	102	112	-25	86	5130	86	3920	86	3630	87	3390	88	3160	101	111														
-20	85	5120	87	4160	88	3900	89	3650	90	3410	102	112	-20	85	5100	86	4020	87	3770	88	3520	89	3290	101	111														
-15	84	5210	88	4320	89	4050	90	3790	91	3540	102	112	-15	84	5070	87	4170	88	3910	89	3660	89	3410	101	111														
-10	85	5410	88	4490	89	4210	90	3940	91	3680	102	112	-10	84	5220	87	4340	88	4060	89	3800	90	3550	101	111														
-5	86	5630	89	4670	90	4380	91	4100	92	3830	102	112	-5	85	5430	88	4510	89	4230	90	3950	91	3690	101	111														
0	86	5860	90	4870	91	4560	92	4270	92	3990	102	112	0	85	5650	89	4690	90	4400	90	4120	91	3850	101	111														
5	87	6140	91	5100	92	4780	92	4480	93	4180	102	112	5	86	5920	89	4920	90	4610	91	4310	92	4030	101	111														
10	88	6440	91	5350	92	5020	93	4700	94	4390	102	112	10	87	6200	90	5150	91	4830	92	4520	93	4230	101	111														
15	89	6800	92	5640	93	5300	94	4960	95	4630	102	112	15	88	6540	91	5440	92	5100	93	4770	94	4460	101	111														
20	89	7300	93	5970	94	5590	95	5240	96	4900	102	112	20	89	6910	92	5740	93	5380	94	5040	94	4710	101	111														
21	89	7420	94	6030	94	5660	95	5290	96	4950	102	112	23	90	7160	93	5940	94	5570	94	5210	95	4870	101	111														
23	89	7670	94	6180	95	5790	96	5420	96	5070	102	112	25	90	7390	93	6080	94	5700	95	5330	95	4990	101	111														
													26	90	7530	93	6150	94	5770	95	5400	96	5050	101	111														

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					10 KTS		20 KTS		30 KTS		10 KTS							20 KTS		30 KTS		10 KTS		20 KTS							30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
					V1	DIST	V1	DIST	V1	DIST	V1	DIST						V1	DIST	V1	DIST	V1	DIST	V1	DIST						V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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WEIGHT = 14500 LBS										WEIGHT = 14000 LBS											
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR	V2 KIAS
			10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
-35	89 5140	89 3970	89 3630	89 3330	89 3040	96 108				-35	89 5150	89 3980	89 3650	89 3350	89 3070	94 106					
-30	88 5100	88 3940	88 3610	88 3300	88 3020	96 107				-30	88 5100	88 3950	88 3620	88 3320	88 3040	94 106					
-25	86 5060	86 3910	86 3580	86 3280	86 2990	96 107				-25	87 5060	87 3920	87 3590	87 3290	87 3010	94 106					
-20	85 5020	85 3880	85 3550	85 3250	85 2970	96 107				-20	86 5020	86 3890	86 3560	86 3260	86 2990	94 106					
-15	84 4990	84 3850	84 3530	84 3230	84 2950	96 107				-15	84 4970	84 3850	84 3530	84 3240	84 2960	94 105					
-10	83 4950	83 3820	83 3500	83 3200	83 2950	96 106				-10	83 4930	83 3820	83 3500	83 3210	83 2930	94 105					
-5	82 4900	82 3790	82 3510	83 3280	84 3060	96 106				-5	82 4880	82 3780	82 3470	82 3170	82 2900	94 105					
0	81 4850	82 3900	83 3650	84 3410	85 3180	96 106				0	81 4820	81 3740	81 3430	81 3200	82 2980	94 105					
5	80 4900	83 4070	84 3810	85 3570	85 3330	96 106				5	79 4730	81 3820	82 3570	82 3340	83 3120	94 105					
10	81 5120	84 4260	85 3990	86 3730	86 3490	96 106				10	79 4800	82 3990	82 3730	83 3490	84 3260	94 105					
15	82 5390	85 4470	86 4190	87 3920	87 3670	96 106				15	80 5040	83 4190	84 3920	84 3670	85 3430	94 105					
20	83 5670	86 4710	87 4420	88 4130	88 3860	96 106				20	81 5300	84 4410	85 4130	85 3860	86 3610	94 104					
25	85 5990	87 4980	88 4660	89 4370	89 4080	96 106				25	82 5600	85 4650	86 4360	86 4080	87 3810	94 104					
30	86 6350	88 5270	89 4940	90 4620	90 4320	96 106				30	84 5920	86 4920	87 4610	87 4310	88 4030	94 104					
34	87 6650	89 5520	90 5180	90 4850	91 4530	96 106				35	85 6270	87 5210	88 4880	88 4570	89 4270	94 104					
35	87 6730	89 5590	90 5240	91 4910	91 4580	96 106				37	85 6430	87 5330	88 5000	89 4680	89 4370	94 104					
37	87 6900	90 5730	90 5370	91 5020	91 4690	96 106				38	86 6500	88 5400	88 5060	89 4730	89 4420	94 104					

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
8000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 160 KIAS										WEIGHT = 13000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2	KIAS														
	10 KTS			20 KTS		30 KTS		10 KTS						20 KTS			30 KTS																						
	V1 DIST KIAS	V1 DIST FT		V1 DIST KIAS	V1 DIST FT	V1 DIST KIAS	V1 DIST FT	V1 DIST KIAS	V1 DIST FT					V1 DIST KIAS	V1 DIST FT		V1 DIST KIAS	V1 DIST FT																					
-35	89	5160	89	4010	89	3680	89	3380	89	3100	92	105	-35	90	5190	90	4050	90	3720	90	3420	90	3140	91	104														
-30	88	5110	88	3970	88	3650	88	3350	88	3070	92	105	-30	88	5140	88	4010	88	3690	88	3380	88	3100	91	104														
-25	87	5060	87	3940	87	3610	87	3320	87	3040	92	105	-25	87	5080	87	3960	87	3650	87	3350	87	3070	91	103														
-20	86	5020	86	3900	86	3580	86	3280	86	3010	92	104	-20	86	5030	86	3920	86	3610	86	3310	86	3040	91	103														
-15	85	4970	85	3860	85	3550	85	3250	85	2980	92	104	-15	85	4970	85	3880	85	3570	85	3280	85	3000	90	103														
-10	83	4920	83	3820	83	3510	83	3220	83	2950	92	104	-10	84	4920	84	3840	84	3530	84	3240	84	2970	90	102														
-5	82	4860	82	3780	82	3470	82	3180	82	2910	92	103	-5	82	4860	82	3790	82	3480	82	3200	82	2930	90	102														
0	81	4800	81	3730	81	3430	81	3140	81	2870	92	103	0	81	4790	81	3740	81	3440	81	3150	81	2890	90	102														
5	79	4710	79	3660	79	3360	80	3130	81	2910	92	103	5	80	4690	80	3660	80	3360	80	3080	80	2820	90	101														
10	78	4620	79	3730	80	3490	81	3260	82	3050	92	103	10	78	4600	78	3580	78	3290	78	3050	79	2840	90	101														
15	78	4720	80	3910	81	3670	82	3430	83	3200	92	103	15	76	4480	78	3650	79	3420	79	3200	80	2980	90	101														
20	79	4950	81	4110	82	3850	83	3600	84	3360	92	103	20	77	4630	79	3840	80	3590	80	3360	81	3130	90	101														
25	80	5220	83	4340	83	4060	84	3800	85	3550	92	103	25	78	4870	80	4040	81	3780	82	3540	82	3300	90	101														
30	81	5520	84	4580	84	4290	85	4020	86	3750	92	103	30	79	5140	81	4270	82	4000	83	3740	83	3480	90	101														
35	83	5840	85	4850	85	4540	86	4250	87	3970	92	103	35	80	5440	82	4510	83	4220	84	3950	84	3690	90	101														
38	83	6050	85	5020	86	4710	87	4400	87	4110	92	103	38	81	5630	83	4670	84	4370	84	4090	85	3810	90	101														

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2	KIAS														
	10 KTS			20 KTS		30 KTS		10 KTS						20 KTS			30 KTS																						
	V1	DIST		V1	DIST	V1	DIST	V1	DIST					V1	DIST		V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	90	5240	90	4100	90	3780	90	3480	90	3190	92	105	-35	90	5300	90	4170	90	3850	90	3540	90	3260	92	106	-35	89	5170	89	4050	89	3730	89	3430	89	3150	90	104	
-30	89	5170	89	4050	89	3730	89	3430	89	3150	90	104	-30	89	5230	89	4120	89	3790	89	3490	89	3210	91	105	-30	88	5110	88	4000	88	3690	88	3390	88	3110	89	102	
-25	87	5110	87	4000	87	3690	87	3390	87	3110	89	102	-25	88	5160	88	4060	88	3740	88	3450	88	3170	90	103	-25	88	5160	88	4060	88	3740	88	3450	88	3170	90	103	
-20	86	5050	86	3960	86	3640	86	3350	86	3070	89	102	-20	87	5090	87	4000	87	3690	87	3400	87	3120	88	102	-20	87	5090	87	4000	87	3690	87	3400	87	3120	88	102	
-15	85	4990	85	3910	85	3600	85	3310	85	3040	89	101	-15	85	5020	85	3950	85	3640	85	3350	85	3080	87	100	-15	85	5020	85	3950	85	3640	85	3350	85	3080	87	100	
-10	84	4930	84	3860	84	3550	84	3270	84	3000	89	101	-10	84	4960	84	3900	84	3590	84	3300	84	3030	87	100	-10	84	4960	84	3900	84	3590	84	3300	84	3030	87	100	
-5	83	4860	83	3810	83	3510	83	3220	83	2950	89	101	-5	83	4880	83	3840	83	3540	83	3250	83	2990	87	99	-5	83	4880	83	3840	83	3540	83	3250	83	2990	87	99	
0	81	4790	81	3750	81	3450	81	3170	81	2910	89	100	0	82	4800	82	3780	82	3480	82	3200	82	2930	87	99	0	82	4800	82	3780	82	3480	82	3200	82	2930	87	99	
5	80	4690	80	3670	80	3370	80	3100	80	2840	88	100	5	80	4690	80	3680	80	3390	80	3120	80	2860	87	99	5	80	4690	80	3680	80	3390	80	3120	80	2860	87	99	
10	78	4580	78	3590	78	3300	78	3020	78	2770	88	100	10	78	4580	78	3600	78	3310	78	3040	78	2790	86	98	10	78	4580	78	3600	78	3310	78	3040	78	2790	86	98	
15	76	4470	76	3490	76	3210	77	2980	77	2780	88	99	15	77	4460	77	3490	77	3210	77	2950	77	2700	86	98	15	77	4460	77	3490	77	3210	77	2950	77	2700	86	98	
20	74	4350	76	3580	77	3340	78	3120	79	2910	88	99	20	75	4330	75	3390	75	3120	75	2900	76	2710	86	97	20	75	4330	75	3390	75	3120	75	2900	76	2710	86	97	
25	75	4530	78	3760	78	3520	79	3290	80	3070	88	99	25	73	4220	75	3500	76	3270	76	3050	77	2840	86	97	25	73	4220	75	3500	76	3270	76	3050	77	2840	86	97	
30	77	4780	79	3970	80	3710	80	3470	81	3230	88	99	30	74	4440	76	3680	77	3440	78	3220	78	3000	86	97	30	74	4440	76	3680	77	3440	78	3220	78	3000	86	97	
35	78	5050	80	4190	81	3920	81	3670	82	3420	88	99	35	75	4690	77	3880	78	3640	79	3400	79	3160	86	97	35	75	4690	77	3880	78	3640	79	3400	79	3160	86	97	
38	79	5230	81	4330	81	4060	82	3790	82	3540	88	99	38	76	4850	78	4020	79	3760	79	3510	80	3270	86	97	38	76	4850	78	4020	79	3760	79	3510	80	3270	86	97	

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	86 5150	87 3990	88 3740	89 3490	90 3260	102 112	-35	86 5130	86 3920	86 3610	87 3370	88 3150	101 111
-30	85 5130	87 4140	88 3880	89 3630	90 3390	102 112	-30	85 5110	86 4000	87 3750	88 3500	89 3270	101 111
-25	84 5190	88 4300	89 4030	90 3770	91 3520	102 112	-25	84 5090	87 4150	88 3890	88 3640	89 3400	101 111
-20	85 5380	88 4470	89 4190	90 3920	91 3660	102 112	-20	84 5190	87 4310	88 4040	89 3780	90 3530	101 111
-15	85 5590	89 4640	90 4350	91 4070	92 3810	102 112	-15	84 5390	88 4480	89 4200	90 3930	90 3670	101 111
-10	86 5810	89 4830	90 4530	91 4240	92 3960	102 112	-10	85 5600	88 4660	89 4370	90 4090	91 3820	101 111
-5	87 6040	90 5030	91 4710	92 4410	93 4130	102 112	-5	86 5830	89 4840	90 4540	91 4250	91 3980	101 111
0	87 6310	91 5250	92 4920	92 4610	93 4310	102 112	0	86 6080	90 5050	90 4740	91 4440	92 4150	101 111
5	88 6600	91 5490	92 5150	93 4820	94 4510	102 112	5	87 6360	90 5290	91 4960	92 4640	93 4340	101 111
10	89 6980	92 5760	93 5410	94 5070	95 4740	102 112	10	88 6670	91 5550	92 5210	93 4870	94 4560	101 111
15	88 7530	93 6090	94 5710	95 5350	96 5010	102 112	15	89 7050	92 5860	93 5490	94 5150	94 4810	101 111
16	88 7650	93 6160	94 5770	95 5410	96 5060	102 112	16	89 7370	93 6050	93 5680	94 5320	95 4980	101 111
18	88 7900	94 6300	95 5910	95 5530	96 5170	102 112	18	89 7620	93 6190	94 5810	94 5440	95 5090	101 111
							22	88 7880	93 6340	94 5950	95 5570	96 5210	101 111

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	86 5100	86 3910	86 3580	86 3270	86 2980	99 110	-35	86 5080	86 3910	86 3580	86 3270	86 2990	98 108
-30	85 5080	85 3890	85 3560	86 3300	87 3080	99 110	-30	85 5050	85 3890	85 3560	85 3250	85 2970	98 108
-25	84 5050	84 3920	85 3670	86 3430	87 3200	99 110	-25	84 5030	84 3870	84 3540	84 3240	85 3010	98 108
-20	83 5030	85 4060	86 3800	87 3560	88 3320	99 110	-20	83 5000	83 3850	84 3580	85 3350	85 3120	98 108
-15	82 5080	86 4220	87 3950	87 3700	88 3450	99 110	-15	82 4970	83 3970	84 3710	85 3470	86 3240	98 108
-10	83 5270	86 4380	87 4110	88 3840	89 3590	99 110	-10	81 4960	84 4120	85 3860	86 3610	87 3370	98 108
-5	84 5480	87 4550	88 4270	89 4000	89 3740	99 110	-5	82 5150	85 4280	86 4010	86 3750	87 3510	98 108
0	84 5710	87 4750	88 4450	89 4170	90 3900	99 110	0	82 5360	85 4460	86 4180	87 3910	88 3650	98 108
5	85 5970	88 4960	89 4650	90 4360	91 4080	99 110	5	83 5600	86 4660	87 4370	88 4090	89 3820	97 108
10	86 6260	89 5200	90 4880	91 4570	91 4270	99 110	10	84 5860	87 4880	88 4570	89 4280	89 4000	97 108
15	87 6600	90 5490	91 5150	92 4820	92 4510	99 109	15	85 6170	88 5140	89 4820	90 4510	90 4220	97 108
20	88 6970	91 5800	92 5440	93 5090	93 4760	99 109	20	86 6520	89 5420	90 5090	90 4760	91 4450	97 108
22	89 7140	91 5930	92 5560	93 5210	94 4870	99 109	25	87 6900	90 5740	91 5380	91 5040	92 4710	97 108
25	89 7400	92 6140	93 5760	93 5400	94 5050	99 109	26	88 6990	90 5810	91 5450	92 5100	92 4770	97 108
26	90 7490	92 6220	93 5830	94 5460	94 5110	99 109	29	88 7240	91 6020	91 5640	92 5280	93 4940	97 108

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 160 KIAS							VENR = 160 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-35	87 5070	87 3910	87 3580	87 3280	87 3000	96 107	-35	87 5060	87 3920	87 3600	87 3300	87 3020	94 106
-30	86 5040	86 3890	86 3560	86 3260	86 2980	96 107	-30	86 5030	86 3900	86 3570	86 3270	86 2990	94 106
-25	84 5000	84 3860	84 3540	84 3240	84 2960	96 107	-25	85 4990	85 3870	85 3550	85 3250	85 2970	94 105
-20	83 4970	83 3840	83 3520	83 3220	83 2940	96 106	-20	83 4960	83 3840	83 3520	83 3230	83 2950	94 105
-15	82 4940	82 3820	82 3500	83 3260	84 3050	96 106	-15	82 4920	82 3820	82 3500	82 3200	82 2930	94 105
-10	81 4900	82 3870	83 3620	84 3390	84 3160	96 106	-10	81 4880	81 3780	81 3470	81 3180	82 2960	94 105
-5	80 4870	82 4010	83 3760	84 3520	85 3290	96 106	-5	80 4840	80 3760	81 3530	82 3300	83 3080	94 105
0	80 5030	83 4180	84 3920	85 3670	86 3420	96 106	0	79 4780	81 3910	82 3670	83 3430	83 3200	94 105
5	81 5240	84 4360	85 4090	86 3830	86 3580	96 106	5	79 4910	82 4080	83 3830	83 3580	84 3340	94 105
10	82 5490	85 4570	86 4280	86 4010	87 3750	96 106	10	80 5140	83 4270	83 4010	84 3750	85 3500	94 105
15	83 5780	86 4810	87 4510	87 4220	88 3940	96 106	15	81 5400	84 4490	84 4210	85 3940	86 3680	94 104
20	84 6090	87 5070	88 4750	88 4450	89 4160	96 106	20	82 5690	85 4730	85 4440	86 4150	87 3880	94 104
25	85 6440	88 5360	89 5030	89 4700	90 4400	96 106	25	83 6010	86 5000	86 4690	87 4390	88 4100	94 104
29	86 6750	89 5610	89 5260	90 4930	91 4610	96 106	30	85 6360	87 5290	87 4960	88 4640	89 4340	94 104
30	87 6830	89 5680	90 5330	90 4990	91 4660	96 106	33	85 6590	87 5480	88 5140	89 4810	89 4490	94 104
33	87 7080	90 5880	90 5520	91 5170	91 4830	96 106	35	86 6750	88 5610	88 5260	89 4930	90 4600	94 104
							36	86 6830	88 5680	89 5320	89 4980	90 4660	94 104

Figure S25-4 (Sheet 19 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
9000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS																																																																																																																																																																																																																																																																																																																																																																																										
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S																																																																																																																																																																																																																																																																																																																																																																																		
	10 KTS		20 KTS		30 KTS		VR V2 KIAS	10 KTS		20 KTS		30 KTS		VR V2 KIAS	10 KTS		20 KTS		30 KTS		VR V2 KIAS	10 KTS		20 KTS		30 KTS		VR V2 KIAS																																																																																																																																																																																																																																																																																																																																																																																						
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT

WEIGHT = 12500 LBS										VENR = 160 KIAS										WEIGHT = 12000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-35	88	5120	88	4010	88	3690	88	3400	88	3120	89	102	-35	88	5170	88	4070	88	3750	88	3450	88	3170	90	103														
-30	86	5070	86	3970	86	3650	86	3360	86	3080	89	102	-30	87	5110	87	4020	87	3700	87	3410	87	3130	89	102														
-25	85	5010	85	3930	85	3610	85	3320	85	3050	89	101	-25	86	5050	86	3970	86	3660	86	3370	86	3090	87	101														
-20	84	4960	84	3890	84	3580	84	3290	84	3020	89	101	-20	84	4990	84	3920	84	3620	84	3330	84	3060	87	100														
-15	83	4910	83	3850	83	3540	83	3250	83	2980	89	101	-15	83	4930	83	3880	83	3570	83	3290	83	3020	87	99														
-10	82	4860	82	3800	82	3500	82	3210	82	2950	89	101	-10	82	4870	82	3830	82	3530	82	3240	82	2980	87	99														
-5	81	4800	81	3760	81	3460	81	3170	81	2910	88	100	-5	81	4810	81	3780	81	3480	81	3200	81	2940	87	99														
0	79	4730	79	3700	79	3400	79	3120	79	2860	88	100	0	80	4730	80	3710	80	3420	80	3140	80	2880	87	99														
5	78	4640	78	3630	78	3340	78	3070	78	2810	88	100	5	78	4640	78	3640	78	3350	78	3080	78	2820	86	98														
10	76	4550	76	3560	76	3270	77	3040	77	2840	88	99	10	76	4540	76	3560	76	3280	76	3010	76	2760	86	98														
15	74	4440	76	3640	77	3410	78	3190	78	2970	88	99	15	75	4420	75	3470	75	3190	75	2960	76	2760	86	97														
20	75	4610	77	3820	78	3580	79	3350	80	3120	88	99	20	73	4310	75	3560	76	3330	76	3110	77	2900	86	97														
25	76	4850	79	4030	79	3770	80	3530	81	3290	88	99	25	74	4510	76	3740	77	3500	77	3270	78	3050	86	97														
30	78	5120	80	4250	80	3980	81	3730	82	3480	88	99	30	75	4750	77	3940	78	3690	78	3450	79	3220	86	97														
35	79	5410	81	4490	81	4210	82	3940	83	3670	88	99	35	76	5020	78	4160	79	3900	80	3640	80	3400	86	97														
36	79	5480	81	4550	82	4260	82	3980	83	3720	88	99	36	77	5070	79	4210	79	3940	80	3680	80	3440	86	97														

WEIGHT = 11500 LBS										VENR = 160 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS		20 KTS		30 KTS		10 KTS		20 KTS				30 KTS																										
	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																						
-35	88	5240	88	4140	88	3820	88	3520	88	3250	91 104	-35	89	5330	89	4240	89	3920	89	3620	89	3340	91 105																
-30	87	5170	87	4080	87	3770	87	3470	87	3200	89 103	-30	87	5250	87	4170	87	3850	87	3560	87	3280	90 104																
-25	86	5100	86	4030	86	3720	86	3430	86	3150	88 101	-25	86	5170	86	4100	86	3790	86	3500	86	3230	89 102																
-20	85	5030	85	3970	85	3670	85	3380	85	3110	87 100	-20	85	5100	85	4040	85	3740	85	3450	85	3180	87 101																
-15	84	4970	84	3920	84	3620	84	3330	84	3070	85 99	-15	84	5030	84	3980	84	3680	84	3390	84	3130	86 100																
-10	82	4900	82	3870	82	3570	82	3280	82	3020	85 98	-10	83	4950	83	3920	83	3620	83	3340	83	3070	84 98																
-5	81	4830	81	3810	81	3510	81	3230	81	2970	85 97	-5	81	4870	81	3850	81	3560	81	3280	81	3020	83 96																
0	80	4740	80	3740	80	3450	80	3170	80	2910	85 97	0	80	4770	80	3780	80	3490	80	3210	80	2950	83 96																
5	78	4650	78	3660	78	3370	78	3100	78	2850	85 97	5	79	4670	79	3690	79	3400	79	3130	79	2880	82 95																
10	77	4540	77	3570	77	3290	77	3020	77	2770	84 96	10	77	4550	77	3600	77	3320	77	3050	77	2800	82 95																
15	75	4420	75	3470	75	3190	75	2930	75	2690	84 96	15	75	4420	75	3490	75	3210	75	2950	75	2710	82 94																
20	73	4300	73	3370	73	3100	73	2880	74	2680	84 95	20	73	4290	73	3380	73	3110	73	2860	73	2620	82 94																
25	71	4180	73	3470	74	3240	75	3030	75	2820	84 95	25	71	4160	71	3270	71	3010	72	2790	72	2600	82 93																
30	72	4400	75	3650	75	3410	76	3190	76	2970	84 95	30	70	4070	72	3370	72	3150	73	2940	74	2740	82 93																
35	74	4640	76	3850	76	3600	77	3360	77	3140	84 95	35	71	4290	73	3550	73	3320	74	3100	75	2880	82 93																
36	74	4690	76	3890	77	3640	77	3400	78	3170	84 95	36	71	4330	73	3590	74	3350	74	3130	75	2910	82 93																

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
10.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 160 KIAS										WEIGHT = 16000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS												
	10 KTS	V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2	10 KTS		V1 DIST	10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2	10 KTS	V1 DIST		10 KTS	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS									
-35	84	5160	88	4280	89	4010	90	3750	91	3500	102	112	-35	84	5090	86	4130	87	3870	88	3620	89	3380	101	111	-35	84	5090	86	4130	87	3870	88	3620	89	3380	101	111	
-30	85	5360	88	4450	89	4170	90	3900	91	3650	102	112	-30	84	5170	87	4290	88	4020	89	3770	90	3520	101	111	-30	84	5170	87	4290	88	4020	89	3770	90	3520	101	111	
-25	85	5570	89	4620	90	4340	91	4060	92	3790	102	112	-25	84	5370	88	4460	89	4180	89	3910	90	3660	101	111	-25	84	5370	88	4460	89	4180	89	3910	90	3660	101	111	
-20	86	5780	89	4810	90	4510	91	4220	92	3940	102	112	-20	85	5580	88	4630	89	4350	90	4070	91	3800	101	111	-20	85	5580	88	4630	89	4350	90	4070	91	3800	101	111	
-15	86	6010	90	5000	91	4690	92	4390	93	4100	102	112	-15	85	5790	89	4820	90	4520	90	4230	91	3950	101	111	-15	85	5790	89	4820	90	4520	90	4230	91	3950	101	111	
-10	87	6250	90	5200	91	4880	92	4570	93	4270	102	112	-10	86	6020	89	5010	90	4700	91	4400	92	4120	101	111	-10	86	6020	89	5010	90	4700	91	4400	92	4120	101	111	
-5	88	6510	91	5420	92	5080	93	4760	94	4450	102	112	-5	87	6270	90	5220	91	4890	91	4580	92	4290	101	111	-5	87	6270	90	5220	91	4890	91	4580	92	4290	101	111	
0	88	6800	91	5650	92	5310	93	4970	94	4650	102	112	0	87	6540	90	5440	91	5110	92	4790	93	4480	101	111	0	87	6540	90	5440	91	5110	92	4790	93	4480	101	111	
5	88	7220	92	5910	93	5550	94	5200	95	4860	102	112	5	88	6830	91	5690	92	5340	93	5000	93	4680	101	111	5	88	6830	91	5690	92	5340	93	5000	93	4680	101	111	
10	87	7780	93	6220	94	5840	95	5470	95	5120	102	112	10	88	7260	92	5990	93	5620	93	5260	94	4920	101	111	10	88	7260	92	5990	93	5620	93	5260	94	4920	101	111	
11	87	7900	93	6290	94	5900	95	5530	96	5180	102	112	13	88	7620	92	6180	93	5800	94	5440	95	5090	101	111	13	88	7620	92	6180	93	5800	94	5440	95	5090	101	111	
13	87	8150	93	6430	94	6040	95	5660	96	5290	102	112	15	88	7860	93	6320	94	5930	94	5560	95	5200	101	111	15	88	7860	93	6320	94	5930	94	5560	95	5200	101	111	
													17	87	8120	93	6470	94	6070	95	5690	95	5320	101	111	17	87	8120	93	6470	94	6070	95	5690	95	5320	101	111	

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS								
	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	10 KTS	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	84	5050	84	3900	85	3650	86	3410	87	3180	99	110	-35	84	5020	84	3870	84	3540	85	2990	98	108		
-30	83	5030	85	4050	86	3790	87	3540	88	3310	99	110	-30	83	5000	83	3850	84	3570	85	3330	85	3110	98	108
-25	82	5060	85	4200	86	3930	87	3680	88	3440	99	110	-25	82	4980	83	3950	84	3700	85	3460	86	3230	98	108
-20	83	5250	86	4360	87	4090	88	3820	89	3570	99	110	-20	81	4960	84	4100	85	3840	86	3590	86	3360	98	108
-15	83	5450	87	4530	87	4250	88	3980	89	3710	99	110	-15	81	5120	84	4250	85	3990	86	3730	87	3490	98	108
-10	84	5660	87	4710	88	4420	89	4140	90	3870	99	110	-10	82	5320	85	4420	86	4150	87	3880	88	3630	98	108
-5	85	5880	88	4900	89	4590	89	4300	90	4020	99	110	-5	83	5520	86	4600	87	4310	87	4040	88	3770	97	108
0	85	6140	88	5110	89	4790	90	4490	91	4200	99	110	0	83	5750	86	4790	87	4490	88	4210	89	3940	97	108
5	86	6400	89	5330	90	5000	91	4690	91	4390	99	110	5	84	6000	87	5000	88	4690	89	4390	89	4110	97	108
10	87	6730	90	5610	91	5260	91	4930	92	4610	99	109	10	85	6300	88	5250	89	4920	89	4610	90	4310	97	108
15	88	7110	91	5920	92	5550	92	5200	93	4870	99	109	15	86	6540	89	5530	90	5190	90	4860	91	4550	97	108
17	88	7270	91	6050	92	5680	93	5320	93	4980	99	109	20	87	7030	90	5850	90	5490	91	5140	92	4810	97	108
20	89	7560	92	6260	92	5870	93	5500	94	5150	99	109	21	87	7110	90	5910	91	5550	91	5200	92	4870	97	108
21	89	7690	92	6340	93	5940	93	5570	94	5210	99	109	25	88	7450	91	6200	91	5820	92	5450	93	5100	97	108

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS										
VENR = 160 KIAS								VENR = 160 KIAS										
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	
	10 KTS	V1 DIST	10 KTS	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	10 KTS	V1 DIST	20 KTS	30 KTS				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	85	5000	85	3860	85	3540	85 3240	85 2960	96 107	-35	85	4990	85	3870	85 3550	85 3250	85 2970	94 105
-30	83	4980	83	3850	83	3520	83 3230	83 2950	96 106	-30	84	4960	84	3850	84 3530	84 3230	84 2960	94 105
-25	82	4960	82	3830	82	3510	83 3250	84 3030	96 106	-25	83	4940	83	3830	83 3510	83 3210	83 2940	94 105
-20	81	4930	82	3850	82	3610	83 3370	84 3150	96 106	-20	81	4910	81	3800	81 3490	81 3200	82 2950	94 105
-15	80	4900	82	3990	83	3740	84 3500	85 3270	96 106	-15	80	4880	80	3780	81 3510	82 3280	82 3060	94 105
-10	80	4990	83	4150	84	3890	85 3640	85 3400	96 106	-10	79	4840	80	3890	81 3640	82 3410	83 3180	94 105
-5	81	5180	83	4310	84	4040	85 3780	86 3530	96 106	-5	78	4850	81	4030	82 3780	83 3540	84 3310	94 105
0	81	5390	84	4490	85	4210	86 3940	87 3680	96 106	0	79	5050	82	4200	83 3940	83 3690	84 3440	94 105
5	82	5620	85	4680	86	4390	86 4110	87 3840	96 106	5	80	5250	83	4370	83 4100	84 3840	85 3590	94 105
10	83	5890	86	4910	87	4600	87 4310	88 4030	96 106	10	81	5510	84	4590	84 4300	85 4030	86 3770	94 104
15	84	6210	87	5170	87	4850	88 4540	89 4250	96 106	15	82	5790	85	4830	85 4530	86 4240	87 3960	94 104
20	85	6550	88	5460	88	5120	89 4800	90 4490	96 106	20	83	6110	86	5090	86 4770	87 4470	88 4180	94 104
25	86	6940	89	5780	89	5420	90 5080	91 4750	96 106	25	84	6470	87	5390	87 5050	88 4730	88 4420	94 104
29	87	7280	89	6060	90	5680	91 5320	91 4980	96 106	29	85	6770	87	5640	88 5290	89 4960	89 4630	94 104
										30	85	6850	88	5700	88 5350	89 5010	89 4690	94 104
										33	86	7100	88	5910	89 5540	89 5190	90 4850	94 104

Figure S25-4 (Sheet 21 of 22)



TAKEOFF FIELD LENGTH - FEET

FLAPS - 15°
10.000 FEETCONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFFSPEEDBRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 160 KIAS								WEIGHT = 13000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2										
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS														
	KIAS FT	KIAS FT		KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT		KIAS FT	KIAS FT	KIAS FT														
-35	85	4990	85	3880	85	3560	85	3270	85	2990	92	104	-35	85	5000	85	3900	85	3580	85	3290	85	3020	90	103						
-30	84	4960	84	3850	84	3540	84	3240	84	2970	92	104	-30	84	4960	84	3870	84	3560	84	3260	84	2990	90	102						
-25	83	4920	83	3830	83	3520	83	3220	83	2950	92	104	-25	83	4920	83	3840	83	3530	83	3240	83	2970	90	102						
-20	82	4890	82	3800	82	3490	82	3200	82	2930	92	103	-20	82	4880	82	3810	82	3500	82	3210	82	2940	90	102						
-15	81	4860	81	3780	81	3470	81	3180	81	2910	92	103	-15	81	4840	81	3780	81	3470	81	3190	81	2920	90	102						
-10	79	4820	79	3750	79	3440	80	3190	80	2970	92	103	-10	80	4800	80	3750	80	3440	80	3160	80	2890	90	101						
-5	78	4780	79	3780	80	3540	80	3310	81	3090	92	103	-5	78	4760	78	3710	78	3410	78	3130	79	2880	90	101						
0	77	4720	80	3920	80	3680	81	3440	82	3210	92	103	0	77	4700	77	3670	78	3440	79	3210	79	3000	90	101						
5	78	4910	80	4090	81	3830	82	3590	83	3350	92	103	5	76	4640	78	3810	79	3570	79	3340	80	3120	90	101						
10	79	5140	81	4280	82	4010	83	3760	83	3510	92	103	10	76	4800	79	3990	80	3740	80	3500	81	3270	90	101						
15	80	5410	82	4500	83	4220	84	3950	84	3690	92	103	15	77	5040	80	4190	81	3930	81	3680	82	3430	90	101						
20	81	5700	83	4740	84	4450	85	4160	85	3890	92	103	20	79	5300	81	4410	82	4140	82	3870	83	3620	90	101						
25	82	6020	84	5010	85	4700	86	4400	86	4110	92	103	25	80	5600	82	4660	83	4370	83	4090	84	3820	90	101						
30	83	6370	85	5300	86	4970	87	4660	87	4350	92	103	30	81	5920	83	4920	84	4620	84	4320	85	4040	90	101						
33	84	6590	86	5490	86	5150	87	4820	88	4510	92	103	34	82	6190	84	5150	84	4830	85	4520	85	4230	90	101						
34	84	6670	86	5550	87	5210	87	4880	88	4560	92	103																			

WEIGHT = 12500 LBS								VENR = 160 KIAS								WEIGHT = 12000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2										
	10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST		10 KTS	20 KTS	30 KTS														
	KIAS FT	KIAS FT		V1 DIST	V1 DIST	V1 DIST	KIAS FT	KIAS FT	V1 DIST			KIAS FT	KIAS FT		V1 DIST	V1 DIST	V1 DIST	KIAS													
-35	85	5010	85	3930	85	3620	85	3320	85	3050	89	101	-35	86	5050	86	3970	86	3660	86	3370	86	3100	87	101						
-30	84	4970	84	3890	84	3580	84	3290	84	3020	89	101	-30	85	5000	85	3930	85	3620	85	3330	85	3060	87	100						
-25	83	4930	83	3860	83	3550	83	3260	83	2990	89	101	-25	83	4950	83	3890	83	3590	83	3300	83	3030	87	100						
-20	82	4890	82	3830	82	3520	82	3230	82	2970	89	101	-20	82	4900	82	3850	82	3550	82	3260	82	3000	87	99						
-15	81	4840	81	3790	81	3490	81	3200	81	2940	88	100	-15	81	4850	81	3810	81	3510	81	3230	81	2960	87	99						
-10	80	4790	80	3750	80	3450	80	3170	80	2910	88	100	-10	80	4800	80	3770	80	3470	80	3190	80	2930	87	99						
-5	79	4740	79	3710	79	3410	79	3140	79	2870	88	100	-5	79	4740	79	3720	79	3430	79	3150	79	2890	87	98						
0	77	4680	77	3660	77	3370	77	3090	77	2830	88	99	0	78	4670	78	3670	78	3380	78	3100	78	2850	86	98						
5	76	4620	76	3620	76	3330	77	3110	77	2900	88	99	5	76	4610	76	3620	76	3330	76	3060	76	2800	86	98						
10	74	4530	76	3720	77	3480	78	3260	78	3040	88	99	10	75	4510	75	3540	75	3250	75	3020	76	2820	86	97						
15	75	4690	77	3900	78	3650	79	3420	79	3190	88	99	15	73	4400	75	3620	75	3390	76	3170	77	2960	86	97						
20	76	4930	78	4100	79	3840	80	3600	80	3360	88	99	20	74	4580	76	3800	77	3560	77	3330	78	3110	86	97						
25	77	5200	80	4320	80	4050	81	3790	81	3540	88	99	25	75	4820	77	4010	78	3750	78	3510	79	3280	86	97						
30	79	5490	81	4570	81	4280	82	4000	82	3740	88	99	30	76	5090	78	4230	79	3960	79	3710	80	3460	86	97						
34	79	5740	81	4770	82	4470	83	4190	83	3910	88	99	34	77	5310	79	4420	80	4140	80	3870	81	3610	86	97						

WEIGHT = 11500 LBS								VENR = 160 KIAS								WEIGHT = 11000 LBS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2										
	10 KTS			V1 DIST		20 KTS		30 KTS				10 KTS			V1 DIST		20 KTS		30 KTS												
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT								
-35	86	5100	86	4030	86	3720	86	3430	86	3150	88	102	-35	86	5180	86	4110	86	3800	86	3500	86	3230	89	103						
-30	85	5040	85	3980	85	3670	85	3390	85	3120	87	100	-30	85	5110	85	4050	85	3740	85	3460	85	3180	87	101						
-25	84	4990	84	3940	84	3630	84	3350	84	3080	85	99	-25	84	5040	84	4000	84	3690	84	3410	84	3140	86	100						
-20	83	4930	83	3890	83	3590	83	3310	83	3040	85	98	-20	83	4980	83	3950	83	3640	83	3360	83	3100	85	98						
-15	81	4870	81	3850	81	3550	81	3270	81	3000	85	98	-15	82	4910	82	3890	82	3590	82	3310	82	3050	83	97						
-10	80	4810	80	3800	80	3500	80	3220	80	2960	85	97	-10	81	4840	81	3840	81	3540	81	3260	81	3000	83	96						
-5	79	4750	79	3750	79	3450	79	3180	79	2920	85	97	-5	79	4780	79	3780	79	3490	79	3210	79	2960	83	96						
0	78	4680	78	3690	78	3400	78	3120	78	2870	85	97	0	78	4690	78	3710	78	3430	78	3150	78	2900	82	95						
5	76	4600	76	3630	76	3340	76	3070	76	2820	84	96	5	77	4610	77	3650	77	3360	77	3100	77	2840	82	95						
10	75	4500	75	3540	75	3260	75	2990	75	2740	84	96	10	75	4500	75	3550	75	3270	75	3010	75	2760	82	94						
15	73	4380	73	3450	73	3170	73	2940	74	2740	84	95	15	73	4380	73	3450	73	3180	73	2920	73	2680	82	94						
20	71	4270	73	3530	74	3300	74	3080	75	2870	84	95	20	71	4260	71	3350	71	3080	72	2840	72	2650	82	94						
25	72	4470	74	3710	75	3470	76	3240	76	3030	84	95	25	70	4140	71	3420	72	3200	73	2990	73	2780	82	93						
30	73	4710	75	3910	76	3660	77	3420	77	3190	84	95	30	71	4340	73	3600	73	3370	74	3150	74	2930	82	93						
34	74	4910	76	4080	77	3820	77	3570	78	3330	84	95	34	72	4530	74	3760	74	3520	75	3280	75	3060	82	93						

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

UNIT -0260 AND ON

SUPPLEMENT 26
UNIVERSAL UNS-1Csp
FLIGHT MANAGEMENT SYSTEM
(WITH OR WITHOUT UNILINK)

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 8/19/96

19 AUGUST 1996

SUPPLEMENT 26

UNIVERSAL UNS-1Csp FLIGHT MANAGEMENT SYSTEM I(WITH OR WITHOUT UNILINK)


Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	19 August 1996
Revision 1	3 March 1998
Revision 2	29 March 1999
Revision 3	04 June 1999

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S26-1 thru S26-4	Revised	3	S26-AA
S26-5 thru S26-6	Revised	2	S26-AA
* S26-7	Revised	3	S26-AB
* S26-7.1	Added	3	S26-AC
S26-8	Revised	2	S26-AA
S26-9/S26-10	Added	2	S26-AA

APPROVED BY 
for Everett W. Pittman, Manager
 Aircraft Certification Office
 Federal Aviation Administration
 Wichita, Kansas
DATE OF APPROVAL 6/4/99

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-34-85	P1000 Phase IV Avionics Modification	560-0500 thru -0516	3	

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this basic manual.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
S26-AA	Airplanes Equipped with Optional Universal UNS-1Csp Flight Management System (with or without Unilink)
S26-AB	Airplanes 560-0500 thru -0516 Equipped with Optional Universal UNS-1Csp Flight Management System (with or without Unilink) incorporating SB560-34-85 and Airplanes -0517 and on Equipped with Optional Universal UNS-1Csp Flight Management System (with or without Unilink)
S26-AC	Airplanes 560-0500 thru -0516 Equipped with Optional Universal UNS-1Csp Flight Management System (with or without Unilink) and not incorporating SB560-34-85

UNIVERSAL UNS-1Csp FLIGHT MANAGEMENT SYSTEM (WITH OR WITHOUT UNILINK)

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Universal UNS-1Csp Flight Management System (with or without Unilink). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The Universal UNS-1Csp Flight Management System (FMS) is approved under TSO C129 B1/C1 and has been demonstrated capable of, and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating, and are receiving usable signals from two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
 - b. Inertial Reference System (IRS).
2. North Atlantic Track (NAT) Minimum Navigational Performance Standards (MNPS) Airspace (as defined in AC 91-49 and AC 91-70) - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (meets the requirements of FAA Notice N8110.60 for primary navigation sensor).
 - b. Inertial Reference System (IRS).
3. Enroute and Terminal - In accordance with AC 20-130A, provided it is receiving usable navigation information from one or more of the following:
 - a. GPS.
 - b. Inertial Reference System (IRS) (enroute only).
 - c. One VOR/DME or multiple DMEs.
4. Non-Precision Approach - In accordance with AC 20-130A and AC 90-94 provided the FMS is receiving usable navigation information from the GPS sensor.

OPERATING LIMITATIONS

GENERAL

1. The following UNS-1 Operator's Manuals (or later appropriate revisions) must be available the flight crew whenever navigation is predicated on the use of the UNS-1Csp:

<u>Report No.</u>	<u>Change Number</u>	<u>Dated</u>	<u>S/W Version</u>
2423sv600	1	January 26, 1996	600.X
2423sv602	-	June 20, 1997	602.X
2423sv603	-	January 30, 1998	603.X

2. The UNS-1Csp must be used in conjunction with the Universal Flight Plan (UFP) Version 11.X or later FAA approved versions, when used as the primary means of navigation in oceanic and remote airspace.
3. When latitude/longitude transferred from the internal data base (IDB) is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
4. The internal data base (IDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Universal Avionics update disk or equivalent.
5. The fuel management mode is for advisory purposes only and it does not replace the airplane primary fuel flow and fuel quantity systems.
6. When operating outside the magnetic variation model area (north of 72 degrees 45 minutes north latitude, or south of 59 degrees 45 minutes south latitude), the pilot must manually insert magnetic variation.
7. It is the responsibility of the pilot in command to exercise reasonable and prudent judgement in using the advisory services of the optional Unilink system.

NAVIGATION

1. The UNS-1Csp position information must be checked for accuracy (reasonableness) prior to use as a means of navigation. The UNS-1Csp position should be updated when a cross-check with other approved navigation equipment reveals an error greater than 3 NM, along-track or cross-track (this limitation does not apply to mod level 603.X software).
2. Navigation within the national airspace system shall not be predicated upon the UNS-1Csp during periods of dead reckoning (DR).
3. Following a period of dead reckoning, position should be verified by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
4. The use of manually inserted runway coordinates is limited to VFR operations only.

VNAV OPERATION WITH FMS SOFTWARE MOD LEVELS 600.X AND 602.X

5. The UNS-1Csp displayed VNAV information is advisory information only. FMS VNAV cannot be coupled to the autopilot or flight director.

VNAV OPERATION WITH FMS SOFTWARE MOD LEVEL 603.X

6. If VNAV is to be used for the approach, VNAV may only be used enroute to within 10 nm of the FAF. When the approach mode is activated, as indicated on the FMS CDU and by the "APP" annunciation on the PFD, VNAV may be armed for the approach.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

APPROACHES

1. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS navigation data base. The FMS data base must incorporate the current update cycle.

NOTE

- Not all published approaches are in the FMS data base. The flight crew must insure that the planned approach is in the data base.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW02, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
2. When using FMS guidance for conducting instrument approach procedures that do not include 'or GPS' in the title of the published procedure, the flight crew must verify that the procedure-specified navaid and associated avionics are operational.
 3. The GPS INTEG light/annunciator must be extinguished prior to beginning the approach.
 4. Instrument approaches must be conducted with the UNS-1Csp in the approach mode of operation and RAIM must be available at the Final Approach Fix.
 5. The FMS approach annunciator must be illuminated (cyan APP on EHSI) prior to the Final Approach Fix.
 6. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the UNS-1Csp.
 7. The UNS-1Csp is approved for FMS VFR approaches as a VFR pilot aid only.
 8. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 9. IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 10. When conducting missed approach procedures, autopilot coupled operation is prohibited until the flight crew has established a rate of climb that ensures all altitude requirements of the procedure will be met.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER 'MSG' ANNUNCIATOR ILLUMINATED

1. Refer to the UNS-1Csp Operator's Manual for the appropriate actions to respond to annunciated messages.

AMBER 'GPS INTEG' ILLUMINATED ON PFD

1. Refer to the UNS-1Csp Operator's Manual for the appropriate actions to respond to annunciated messages

NORMAL PROCEDURES

1. Refer to the appropriate change number of the UNS-1Csp Operator's Manual for FMS navigation (reference limitation 1).
2. Refer to the appropriate revision of the Honeywell Primus 1000 Pilot's Manual, Pub. No. A28-1146-099-XX, for coupling the FMS to the Flight Director and /or Autopilot.

MOD LEVEL 603.X SOFTWARE ONLY (REQUIRES P-1000 PHASE IV)

3. FMS VNAV is selected via the MFD VNAV menu bezel button. To present or activate the FMS computed data, push the MFD VNAV bezel button twice to toggle from SNGL (single point) to FMS.

NOTE

- If VNAV is not armed prior to approach path intercept, VNAV mode may not capture.
 - If VNAV has captured on the coupled flight director side, the opposite side will not be able to engage VNAV mode (it must be selected prior to capture).
4. Altitude preselect should be set to the appropriate altitude prior to reaching MDA to assure correct altitude capture on go-around.
 5. Refer to the appropriate revision of the UNS-1Csp operator's manual for Unilink System operation.

NOTE

- Remote tuning of the RMU's is only possible to the second decimal place.
- After remote tuning of the ADF through the FMS TUNE page, the ADF frequency displayed on the FMS CDU wil revert to dashes.

PERFORMANCE

No Change.

OPERATING LIMITATIONS (Continued)

APPROACHES

1. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS navigation data base. The FMS data base must incorporate the current update cycle.

NOTE

- Not all published approaches are in the FMS data base. The flight crew must insure that the planned approach is in the data base.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW02, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
2. When using FMS guidance for conducting instrument approach procedures that do not include 'or GPS' in the title of the published procedure, the flight crew must verify that the procedure-specified navaid and associated avionics are operational.
 3. The GPS INTEG light/annunciator must be extinguished prior to beginning the approach.
 4. Instrument approaches must be conducted with the UNS-1Csp in the approach mode of operation and RAIM must be available at the Final Approach Fix.
 5. The FMS approach annunciator must be illuminated (cyan APP on EHSI) prior to the Final Approach Fix.
 6. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the UNS-1Csp.
 7. The UNS-1Csp is approved for FMS VFR approaches as a VFR pilot aid only.
 8. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 9. IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 10. When conducting missed approach procedures, autopilot coupled operation is prohibited until the flight crew has established a rate of climb that ensures all altitude requirements of the procedure will be met.
 11. Flight Director 2 FMS VNAV approaches are prohibited.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER 'MSG' ANNUNCIATOR ILLUMINATED

1. Refer to the UNS-1Csp Operator's Manual for the appropriate actions to respond to annunciated messages.

AMBER 'GPS INTEG' ILLUMINATED ON PFD

1. Refer to the UNS-1Csp Operator's Manual for the appropriate actions to respond to annunciated messages

NORMAL PROCEDURES

1. Refer to the appropriate change number of the UNS-1Csp Operator's Manual for FMS navigation (reference limitation 1).
2. Refer to the appropriate revision of the Honeywell Primus 1000 Pilot's Manual, Pub. No. A28-1146-099-XX, for coupling the FMS to the Flight Director and /or Autopilot.

MOD LEVEL 603.X SOFTWARE ONLY (REQUIRES P-1000 PHASE IV)

3. FMS VNAV is selected via the MFD VNAV menu bezel button. To present or activate the FMS computed data, push the MFD VNAV bezel button twice to toggle from SNGL (single point) to FMS.

NOTE

- If VNAV is not armed prior to approach path intercept, VNAV mode may not capture.
 - If VNAV has captured on the coupled flight director side, the opposite side will not be able to engage VNAV mode (it must be selected prior to capture).
4. Altitude preselect should be set to the appropriate altitude prior to reaching MDA to assure correct altitude capture on go-around.
 5. Refer to the appropriate revision of the UNS-1Csp operator's manual for Unilink System operation.

NOTE

- Remote tuning of the RMU's is only possible to the second decimal place.
- After remote tuning of the ADF through the FMS TUNE page, the ADF frequency displayed on the FMS CDU wil revert to dashes.

PERFORMANCE

No Change.

DESCRIPTION

The Universal UNS-1Csp is a fully integrated navigation management system designed to provide the pilot with centralized control for the airplanes navigation sensors, computer based flight planning, and fuel management. The FMS accepts primary position information from short and long-range navigation sensors. The primary position data received from the sensors is filtered within the FMS to derive a Best Computed Position (BCP). It accomplishes these computations and advises the flight crew of components or systems requiring attention, as well as other irregularities, such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter Dead Reckoning (DR) mode and so inform the pilot through a message on the control display unit (CDU).

The UNS-1Csp provides lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot, except for software mod level 603.X installations. With software mod level 603.X, the FMS may be coupled to the autopilot/flight director for VNAV operation if the FMS option under the VNAV menu on the MFD bezel has been selected (Honeywell P-1000 Display and Flight Guidance System Phase IV required). The FMS computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

When an approach has been loaded into the active flight plan and the aircraft is within 2.0 nautical miles of the Final Approach Fix, the cyan APP annunciation in the PFD will illuminate, indicating that the approach mode is engaged.

The optional Unilink interfaces with the UNS-1Csp FMS to provide access for sending or receiving data. The Unilink is operated by controls provided by the CDU. It is a two-way data link for air-to-ground communications which allows the user to connect with a service provider for weather, ATIS, TWIPs and messaging. The system contains a dedicated airborne telephone modem that provides an interface to the airplane telephone system. The system may also contain an imbedded VHF Data Link Comm Radio for connection to the service provider.

FAA APPROVED
Airplane Flight Manual

MODEL 560
CitationV
Ultra

UNIT -0260 AND ON

SUPPLEMENT 27

**GERMAN REGISTERED AIRPLANES CERTIFIED FOR
STEEP APPROACHES AND SHORT FIELD LANDING
OPERATIONS**

This Airplane Flight Manual Supplement is approved by the U.S. Federal Aviation Administration (FAA) on behalf of the German Luftfahrt-Bundesamt.

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 9/10/97

SUPPLEMENT 27

GERMAN REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS



Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	10 September 1997
Revision 1	2 December 1998

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
* S27-1 thru S27-5	Revised	1	S27-AA
S27-6 thru S27-8	Original	0	S27-AA
* S27-9	Revised	1	S27-AA
S27-10 thru S27-16	Original	0	S27-AA

APPROVED BY 
 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 12/2/98

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S27-AA

German Registered Airplanes Certified for
Steep Approaches and Short Field Operations

GERMAN REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Certified for Steep Approaches and Short Field Operations. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The nose wheel steering, antiskid system, speed brakes, and thrust reversers must be operative.

LANDING GEAR LIFE LIMITS:

Each full stop landing shall be multiplied by a factor of 1.33 for calculating replacement life of all components.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS:

- a. Maximum Landing Weight - 12,000 lbs.
- b. The most forward center of gravity is limited to 17% Mean Aerodynamic Chord (MAC) at 12,000 lbs. and 18% MAC at 10,500 lbs. with a linear variation between these points.

LANDING OPERATIONAL LIMITS:

- a. Airspeed - $V_{REF} + 5$ KIAS.
- b. Deliberate Single Engine Approaches are not approved.
- c. Minimum visual guidance intercept is 1,000 ft.
- d. Minimum ILS guidance intercept is 1,800 ft.
- e. Maximum Altitude Limit is 5,000 ft.
- f. Tailwind landings prohibited.

KINDS OF OPERATIONS:

- a. The airplane is approved for manually flown steep approaches in visual or instrument meteorological conditions, with no known or forecast icing conditions and the airframe free of ice, using an approved visual or ILS glide path reference system.
- b. This supplement does not constitute operational approval to conduct steep approach and short field landing operations.

PERFORMANCE LIMITATIONS:

- a. The data in this supplement are predicated on the use of an approach path angle of 5.5 degrees, and a screen height of 35 feet.
- b. The airplane must be in the "Both Engines Operating" configuration.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

CAUTION

MINIMUM ALTITUDE FOR INITIATING A GO-AROUND IS 40 FEET ABOVE THE AIRFIELD APPROACH MINIMUM.

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

ENGINE FAILURE DURING APPROACH

1. Throttle (Operating Engine) - T.O. Power.
2. Airplane Pitch Attitude - 10 degrees (Go-around mode on flight director for reference).
3. Flaps - T.O. & APPR.

NOTE

The landing gear warning horn cannot be silenced if the landing gear is retracted prior to the flaps reaching T.O. & APPR position.

4. Speed Brakes - CONFIRM RETRACTED.
5. Climb Speed - $V_{REF} + 10$ KIAS minimum.
6. Landing Gear - UP (When positive rate-of-climb is established).
7. Flaps - RETRACT at 400 feet.
8. Climb Speed - V_{ENR} .
9. Thrust - Maximum Continuous Power.

NORMAL PROCEDURES

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF)

1. Seats, seat belts, and shoulder harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. $V_{REF} + 5$ KIAS and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD, and POSITIONED AFT or FORWARD to clear exit doors.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF) (Continued)

7. Flaps - T.O. and APPROACH.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM.
10. Fuel Crossfeed - OFF.
11. Ignition - ON.
12. Landing Gear - DOWN and LOCKED.
13. Antiskid - CHECK ON.
14. Speed Brakes - EXTEND.
15. Flaps - LAND.
16. Landing Lights - As Required.
17. Airspeed - $V_{REF} + 5$ KIAS.
18. Autopilot & Yaw Damper - OFF.
19. Annunciator Panel - CLEAR (except for speed brake).
20. Pressurization - CHECK ZERO DIFFERENTIAL.

NOTE

On intercepting the glide slope, reduce power to idle to initiate descent and then modulate as necessary to maintain glide slope and $V_{REF} + 5$ KIAS approach speed. Descent rate of 750 to 1100 feet/minute (5.5° approach angle).

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

LANDING (Continued)

2. Brakes - APPLY (after touchdown).

CAUTION

IF DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the anti-skid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

3. Thrust Reversers - DEPLOY (after nose wheel on ground).

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY.

NOTE

To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nosewheel is on the ground.

4. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
5. Reverser Power - MAX REVERSE (do not exceed 76.6% fan speed when OAT is below -18°C or 80.1% fan speed at or above -18°C OAT).
6. Thrust Reversers - REVERSE LEVERS TO IDLE REVERSE AT 60 KIAS.

PROCEDURES FOR USE OF STEEP APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. The maximum landing weight for all conditions presented in this supplement is 12,000 pounds. If this limitation restricts the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing field length, V_{APP} and $V_{REF} +5$ KIAS, from Figure S27-1, then apply the appropriate factors from the note below. If the available runway length is less than the landing field length required, the airplane landing weight must be reduced.

NOTE

- To obtain performance data for values not listed on the table, use the next higher increment for weight, altitude and temperature.
 - Multiply the landing field length by 1.15 for -1 percent (downhill) runway gradient; by 1.45 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing field length obtained from Figure S27-1.
 - The actual landing distances were multiplied by 1.82 (as allowed with the thrust reversers) to determine the required landing field lengths presented in Figure S27-1.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-36 and 4-37) are for advisory information only.

LANDING FIELD LENGTH - FEET

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3530	3270	3020	2790
-20	3570	3310	3060	2820
-15	3610	3350	3100	2860
-10	3650	3390	3130	2900
-5	3690	3430	3170	2930
0	3740	3470	3210	2970
5	3780	3510	3250	3010
10	3820	3550	3290	3050
15	3860	3580	3320	3080
20	3890	3620	3360	3110
25	3930	3660	3400	3150
30	3970	3690	3430	3180
35	4000	3730	3460	3220
40	4040	3770	3500	3250
45	4090	3800	3540	3290
50	4130	3850	3580	3330
54	4170	3880	3620	3360

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3420	3160	2920	2700
-20	3450	3200	2950	2730
-15	3490	3230	2990	2760
-10	3530	3270	3020	2790
-5	3560	3310	3060	2830
0	3600	3340	3100	2860
5	3640	3380	3130	2900
10	3680	3420	3170	2930
15	3710	3450	3200	2960
20	3750	3480	3230	3000
25	3780	3520	3270	3030
30	3820	3550	3300	3060
35	3850	3580	3330	3090
40	3890	3620	3360	3120
45	3920	3650	3400	3160
50	3960	3690	3440	3190
54	4000	3730	3470	3230

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3300	3050	2820	2620
-20	3330	3080	2850	2640
-15	3370	3120	2880	2670
-10	3400	3150	2910	2700
-5	3440	3180	2950	2730
0	3470	3220	2980	2760
5	3510	3250	3020	2790
10	3540	3290	3050	2820
15	3570	3320	3080	2850
20	3600	3350	3110	2880
25	3630	3380	3140	2910
30	3670	3410	3170	2930
35	3700	3440	3200	2960
40	3730	3470	3230	2990
45	3760	3510	3260	3030
50	3800	3540	3290	3060
54	3830	3570	3330	3090

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3190	2950	2740	2530
-20	3220	2970	2760	2560
-15	3250	3000	2790	2580
-10	3280	3030	2820	2610
-5	3310	3070	2840	2640
0	3340	3100	2870	2670
5	3380	3130	2900	2690
10	3410	3160	2930	2720
15	3430	3190	2960	2740
20	3460	3220	2980	2770
25	3490	3250	3010	2790
30	3520	3270	3040	2820
35	3550	3300	3060	2840
40	3580	3330	3090	2870
45	3610	3360	3120	2900
50	3640	3390	3150	2930
54	3670	3420	3180	2960

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3080	2860	2650	2450
-20	3100	2890	2680	2470
-15	3130	2910	2700	2500
-10	3160	2930	2730	2520
-5	3190	2960	2750	2550
0	3220	2990	2780	2580
5	3250	3010	2800	2600
10	3270	3040	2830	2620
15	3300	3060	2850	2650
20	3330	3090	2870	2670
25	3350	3110	2890	2690
30	3380	3140	2910	2710
35	3400	3160	2940	2730
40	3430	3190	2960	2760
45	3460	3220	2990	2780
50	3490	3250	3020	2810
54	3520	3280	3050	2830

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2990	2780	2570	2370
-20	3010	2800	2590	2390
-15	3030	2820	2610	2410
-10	3050	2840	2630	2430
-5	3080	2860	2660	2460
0	3100	2890	2680	2480
5	3120	2910	2710	2510
10	3150	2930	2730	2530
15	3170	2950	2750	2550
20	3190	2970	2770	2570
25	3220	2990	2790	2590
30	3240	3010	2810	2610
35	3260	3030	2830	2630
40	3280	3050	2850	2650
45	3310	3080	2870	2670
50	3340	3110	2900	2700
54	3360	3130	2920	2720

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE. REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 1 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
1000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

		WEIGHT = 12000 POUNDS			
		VREF + 5 = 99 KIAS		VAPP = 101 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3630	3370 3110 2870		
-20		3680	3410 3150 2910		
-15		3720	3450 3190 2950		
-10		3760	3490 3230 2990		
-5		3810	3530 3270 3030		
0		3850	3580 3320 3070		
5		3890	3620 3360 3110		
10		3940	3660 3400 3150		
15		3980	3700 3430 3180		
20		4020	3740 3470 3220		
25		4060	3780 3510 3260		
30		4100	3810 3550 3290		
35		4140	3850 3580 3330		
40		4180	3890 3620 3370		
45		4220	3930 3660 3400		
50		4270	3980 3700 3440		
52		4290	4000 3730 3460		

		WEIGHT = 11500 POUNDS			
		VREF + 5 = 97 KIAS		VAPP = 99 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3510	3250 3010 2770		
-20		3550	3290 3040 2810		
-15		3590	3330 3080 2840		
-10		3630	3370 3120 2880		
-5		3670	3410 3160 2920		
0		3710	3450 3190 2960		
5		3750	3490 3230 2990		
10		3790	3520 3270 3030		
15		3830	3560 3300 3060		
20		3860	3590 3340 3100		
25		3900	3630 3370 3130		
30		3940	3670 3410 3160		
35		3970	3700 3440 3200		
40		4010	3740 3480 3230		
45		4050	3780 3510 3270		
50		4090	3820 3550 3300		
52		4120	3840 3570 3320		

		WEIGHT = 11000 POUNDS			
		VREF + 5 = 95 KIAS		VAPP = 97 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3390	3140 2900 2690		
-20		3420	3170 2930 2720		
-15		3460	3210 2970 2750		
-10		3500	3240 3000 2780		
-5		3530	3280 3040 2810		
0		3570	3320 3070 2840		
5		3610	3350 3110 2880		
10		3650	3390 3140 2910		
15		3680	3420 3170 2940		
20		3710	3450 3210 2970		
25		3750	3480 3240 3000		
30		3780	3520 3270 3030		
35		3810	3550 3300 3060		
40		3850	3580 3330 3100		
45		3880	3620 3370 3130		
50		3920	3660 3400 3160		
52		3940	3680 3420 3180		

		WEIGHT = 10500 POUNDS			
		VREF + 5 = 93 KIAS		VAPP = 94 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3270	3030 2810 2600		
-20		3300	3060 2840 2630		
-15		3330	3090 2860 2660		
-10		3370	3120 2890 2680		
-5		3400	3160 2920 2710		
0		3440	3190 2950 2740		
5		3470	3220 2990 2770		
10		3500	3260 3020 2800		
15		3540	3290 3050 2830		
20		3570	3320 3080 2850		
25		3600	3340 3110 2880		
30		3630	3370 3130 2910		
35		3660	3400 3160 2930		
40		3690	3430 3190 2960		
45		3720	3470 3220 2990		
50		3760	3500 3260 3030		
52		3770	3520 3280 3040		

		WEIGHT = 10000 POUNDS			
		VREF + 5 = 91 KIAS		VAPP = 92 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3150	2930 2720 2520		
-20		3180	2960 2750 2540		
-15		3210	2980 2770 2570		
-10		3240	3010 2800 2590		
-5		3280	3040 2830 2620		
0		3310	3070 2850 2650		
5		3340	3100 2880 2680		
10		3370	3130 2900 2700		
15		3400	3150 2930 2720		
20		3420	3180 2950 2750		
25		3450	3210 2980 2770		
30		3480	3230 3000 2790		
35		3500	3260 3030 2820		
40		3530	3290 3060 2840		
45		3560	3320 3080 2870		
50		3600	3350 3120 2890		
52		3610	3370 3130 2910		

		WEIGHT = 9500 POUNDS			
		VREF + 5 = 89 KIAS		VAPP = 90 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3060	2840 2640 2430		
-20		3080	2870 2660 2450		
-15		3100	2890 2680 2480		
-10		3130	2910 2700 2500		
-5		3150	2940 2730 2530		
0		3180	2960 2760 2550		
5		3210	2990 2780 2580		
10		3230	3010 2800 2600		
15		3260	3030 2830 2620		
20		3280	3050 2850 2640		
25		3310	3070 2870 2670		
30		3330	3100 2890 2690		
35		3360	3120 2910 2710		
40		3380	3150 2930 2730		
45		3410	3170 2950 2750		
50		3440	3200 2980 2780		
52		3450	3220 2990 2790		

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 2 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
2000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3740	3470	3210	2970
-20	3780	3510	3250	3010
-15	3830	3550	3290	3050
-10	3880	3600	3340	3090
-5	3920	3640	3380	3130
0	3970	3690	3420	3170
5	4020	3730	3470	3210
10	4060	3780	3510	3250
15	4110	3820	3550	3290
20	4150	3860	3590	3330
25	4190	3900	3630	3370
30	4230	3940	3670	3410
35	4270	3980	3710	3450
40	4320	4030	3750	3490
45	4360	4070	3790	3520
50	4410	4120	3830	3570

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3610	3350	3100	2860
-20	3650	3390	3140	2900
-15	3690	3430	3170	2940
-10	3740	3470	3210	2970
-5	3780	3510	3260	3010
0	3820	3550	3300	3050
5	3870	3600	3340	3090
10	3910	3640	3380	3130
15	3950	3670	3410	3170
20	3990	3710	3450	3200
25	4030	3750	3490	3240
30	4060	3790	3520	3270
35	4100	3820	3560	3310
40	4140	3860	3600	3340
45	4180	3900	3630	3380
50	4230	3950	3680	3420

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3480	3230	2990	2760
-20	3520	3260	3020	2790
-15	3560	3300	3060	2830
-10	3600	3340	3090	2860
-5	3640	3380	3130	2900
0	3680	3420	3170	2930
5	3720	3460	3210	2970
10	3760	3490	3240	3010
15	3790	3530	3280	3040
20	3830	3560	3310	3070
25	3860	3600	3340	3100
30	3900	3630	3380	3140
35	3930	3670	3410	3170
40	3970	3700	3450	3200
45	4010	3740	3480	3240
50	4050	3780	3520	3270

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3360	3110	2880	2680
-20	3390	3140	2910	2700
-15	3430	3180	2940	2730
-10	3460	3210	2970	2760
-5	3500	3250	3010	2790
0	3540	3290	3040	2820
5	3570	3320	3080	2850
10	3610	3360	3110	2880
15	3640	3390	3140	2910
20	3670	3420	3180	2940
25	3710	3450	3210	2970
30	3740	3480	3240	3000
35	3770	3510	3270	3030
40	3800	3540	3300	3060
45	3840	3580	3330	3100
50	3880	3620	3370	3130

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3240	3000	2790	2590
-20	3270	3030	2820	2610
-15	3300	3060	2850	2640
-10	3330	3090	2870	2670
-5	3370	3120	2900	2700
0	3400	3160	2930	2730
5	3430	3190	2960	2750
10	3470	3220	2990	2780
15	3500	3250	3020	2810
20	3520	3280	3040	2830
25	3550	3310	3070	2850
30	3580	3330	3100	2880
35	3610	3360	3130	2900
40	3640	3390	3160	2930
45	3670	3420	3180	2960
50	3710	3460	3220	2990

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3130	2910	2700	2500
-20	3150	2940	2730	2520
-15	3180	2960	2750	2550
-10	3200	2990	2780	2570
-5	3240	3010	2800	2600
0	3270	3040	2830	2630
5	3300	3070	2860	2650
10	3330	3090	2880	2680
15	3350	3110	2900	2700
20	3380	3140	2930	2720
25	3400	3170	2950	2750
30	3430	3190	2970	2770
35	3460	3220	2990	2790
40	3480	3240	3020	2810
45	3510	3270	3040	2840
50	3540	3300	3070	2870

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 3 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
3000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3810	3530	3270	3020
-25	3850	3570	3310	3060
-20	3900	3620	3350	3100
-15	3950	3670	3400	3150
-10	4000	3710	3450	3190
-5	4050	3760	3490	3240
0	4100	3810	3540	3280
5	4150	3860	3580	3320
10	4200	3900	3630	3370
15	4240	3950	3670	3410
20	4290	3990	3710	3450
25	4330	4030	3750	3490
30	4380	4080	3800	3530
35	4420	4120	3840	3570
40	4470	4170	3880	3610
45	4520	4210	3930	3650
48	4550	4250	3960	3690

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3680	3410	3150	2910
-25	3720	3450	3190	2950
-20	3760	3490	3230	2990
-15	3800	3530	3270	3030
-10	3850	3580	3320	3070
-5	3900	3620	3360	3110
0	3940	3670	3400	3160
5	3990	3710	3450	3200
10	4040	3750	3490	3240
15	4080	3790	3530	3270
20	4120	3830	3570	3310
25	4160	3870	3600	3350
30	4200	3910	3640	3390
35	4240	3950	3680	3420
40	4280	3990	3720	3460
45	4330	4040	3760	3500
48	4360	4070	3790	3530

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3540	3280	3040	2810
-25	3580	3320	3070	2840
-20	3620	3360	3110	2880
-15	3660	3400	3150	2910
-10	3700	3440	3190	2950
-5	3750	3480	3230	2990
0	3790	3520	3270	3030
5	3830	3560	3310	3070
10	3870	3600	3350	3110
15	3910	3640	3380	3140
20	3950	3680	3420	3170
25	3990	3710	3460	3210
30	4020	3750	3490	3240
35	4060	3790	3530	3280
40	4100	3820	3560	3310
45	4140	3860	3600	3350
48	4170	3890	3630	3380

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3420	3170	2930	2720
-25	3450	3200	2960	2750
-20	3490	3230	2990	2780
-15	3520	3270	3030	2810
-10	3560	3310	3070	2840
-5	3600	3350	3100	2880
0	3640	3380	3140	2910
5	3680	3420	3180	2940
10	3720	3460	3210	2980
15	3750	3490	3250	3010
20	3790	3530	3280	3040
25	3820	3560	3310	3070
30	3860	3590	3340	3100
35	3890	3630	3380	3140
40	3930	3660	3410	3170
45	3960	3700	3440	3200
48	3990	3720	3470	3230

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3290	3050	2840	2630
-25	3320	3080	2870	2660
-20	3360	3110	2890	2690
-15	3390	3140	2920	2720
-10	3430	3180	2950	2750
-5	3460	3210	2980	2780
0	3500	3250	3010	2810
5	3530	3280	3050	2840
10	3570	3320	3080	2860
15	3600	3350	3110	2890
20	3630	3380	3140	2920
25	3660	3410	3170	2940
30	3690	3440	3200	2970
35	3720	3470	3230	3000
40	3760	3500	3260	3030
45	3790	3530	3290	3060
48	3820	3560	3320	3080

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3180	2960	2750	2540
-25	3200	2980	2770	2570
-20	3230	3010	2800	2590
-15	3260	3040	2820	2620
-10	3290	3060	2850	2650
-5	3330	3090	2880	2670
0	3360	3120	2910	2700
5	3390	3150	2940	2730
10	3420	3180	2960	2760
15	3450	3210	2990	2780
20	3480	3240	3010	2810
25	3510	3260	3030	2830
30	3530	3290	3060	2850
35	3560	3320	3090	2880
40	3590	3350	3110	2900
45	3620	3380	3140	2930
48	3650	3400	3170	2950

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 4 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3920	3640 3370 3120		
-25	3970	3690 3420 3160		
-20	4020	3730 3460 3210		
-15	4070	3780 3510 3250		
-10	4120	3830 3560 3300		
-5	4180	3880 3610 3350		
0	4230	3940 3660 3390		
5	4290	3990 3710 3440		
10	4340	4040 3750 3490		
15	4380	4080 3800 3530		
20	4430	4130 3840 3570		
25	4480	4170 3890 3610		
30	4530	4220 3930 3660		
35	4580	4270 3980 3700		
40	4620	4310 4020 3740		
45	4680	4360 4070 3790		
46	4690	4380 4080 3800		

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3780	3510 3250 3010		
-25	3830	3550 3290 3050		
-20	3870	3600 3340 3090		
-15	3920	3640 3380 3130		
-10	3970	3690 3430 3170		
-5	4020	3740 3470 3220		
0	4070	3790 3520 3260		
5	4120	3830 3560 3310		
10	4170	3880 3610 3350		
15	4210	3920 3650 3390		
20	4250	3960 3690 3430		
25	4300	4000 3730 3470		
30	4340	4050 3770 3510		
35	4380	4090 3810 3550		
40	4430	4130 3850 3590		
45	4480	4180 3900 3630		
46	4490	4190 3910 3640		

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3650	3380 3130 2890		
-25	3690	3420 3170 2930		
-20	3730	3460 3210 2970		
-15	3770	3500 3250 3010		
-10	3820	3550 3290 3050		
-5	3860	3590 3330 3090		
0	3910	3640 3380 3130		
5	3960	3680 3420 3170		
10	4000	3720 3460 3210		
15	4040	3760 3500 3250		
20	4080	3800 3530 3280		
25	4120	3840 3570 3320		
30	4160	3880 3610 3360		
35	4200	3920 3650 3390		
40	4240	3950 3690 3430		
45	4280	4000 3730 3470		
46	4300	4010 3740 3480		

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3510	3260 3010 2800		
-25	3550	3290 3050 2830		
-20	3590	3330 3090 2860		
-15	3630	3370 3120 2890		
-10	3670	3410 3160 2930		
-5	3710	3450 3200 2960		
0	3750	3490 3240 3000		
5	3800	3530 3280 3040		
10	3830	3570 3320 3080		
15	3870	3600 3350 3110		
20	3910	3640 3390 3140		
25	3940	3670 3420 3180		
30	3980	3710 3450 3210		
35	4020	3750 3490 3250		
40	4050	3780 3520 3280		
45	4090	3820 3560 3320		
46	4110	3830 3580 3330		

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3380	3130 2910 2700		
-25	3420	3170 2940 2730		
-20	3450	3200 2970 2760		
-15	3490	3240 3000 2790		
-10	3530	3270 3030 2830		
-5	3560	3310 3070 2860		
0	3600	3350 3110 2890		
5	3640	3390 3140 2920		
10	3680	3420 3180 2950		
15	3710	3450 3210 2980		
20	3740	3490 3240 3010		
25	3770	3520 3270 3040		
30	3810	3550 3300 3070		
35	3840	3580 3340 3100		
40	3870	3620 3370 3130		
45	3910	3650 3400 3170		
46	3920	3660 3410 3180		

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3260	3030 2820 2610		
-25	3290	3060 2850 2640		
-20	3320	3090 2870 2670		
-15	3350	3110 2900 2690		
-10	3390	3140 2930 2720		
-5	3420	3180 2960 2750		
0	3460	3210 2990 2780		
5	3490	3250 3020 2810		
10	3520	3280 3050 2840		
15	3550	3310 3070 2870		
20	3580	3340 3100 2890		
25	3610	3360 3130 2920		
30	3640	3390 3160 2940		
35	3670	3420 3190 2970		
40	3700	3450 3220 2990		
45	3740	3490 3250 3020		
46	3750	3500 3260 3030		

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 5 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3990	3700	3430	3180	
-30	4040	3750	3480	3220	
-25	4090	3800	3530	3270	
-20	4150	3850	3580	3320	
-15	4200	3910	3630	3360	
-10	4260	3960	3680	3410	
-5	4310	4010	3730	3460	
0	4370	4070	3780	3510	
5	4430	4120	3840	3560	
10	4480	4170	3890	3610	
15	4530	4220	3930	3660	
20	4580	4270	3980	3700	
25	4640	4320	4030	3750	
30	4690	4370	4070	3790	
35	4740	4420	4120	3840	
40	4790	4470	4170	3880	
44	4840	4520	4220	3930	

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3850	3570	3310	3060	
-30	3900	3620	3350	3100	
-25	3940	3660	3400	3150	
-20	3990	3710	3440	3190	
-15	4040	3760	3490	3240	
-10	4100	3810	3540	3280	
-5	4150	3860	3590	3330	
0	4200	3910	3640	3380	
5	4250	3960	3690	3420	
10	4300	4010	3730	3470	
15	4350	4050	3770	3510	
20	4400	4100	3820	3550	
25	4440	4140	3860	3590	
30	4490	4190	3900	3630	
35	4540	4230	3950	3680	
40	4590	4280	3990	3720	
44	4630	4330	4040	3760	

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3710	3440	3190	2950	
-30	3750	3480	3230	2980	
-25	3800	3530	3270	3030	
-20	3840	3570	3310	3070	
-15	3890	3610	3350	3110	
-10	3930	3660	3400	3150	
-5	3980	3710	3440	3190	
0	4030	3750	3490	3240	
5	4080	3800	3530	3280	
10	4120	3840	3580	3320	
15	4170	3880	3620	3360	
20	4210	3930	3660	3400	
25	4250	3970	3700	3440	
30	4300	4010	3740	3480	
35	4340	4050	3780	3520	
40	4380	4090	3820	3560	
44	4430	4140	3860	3600	

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3570	3310	3070	2840	
-30	3610	3350	3100	2880	
-25	3650	3390	3140	2910	
-20	3690	3430	3180	2940	
-15	3740	3470	3220	2980	
-10	3780	3510	3260	3020	
-5	3820	3560	3300	3060	
0	3870	3600	3350	3100	
5	3910	3640	3390	3140	
10	3950	3680	3430	3180	
15	3990	3720	3460	3220	
20	4030	3760	3500	3250	
25	4070	3800	3540	3290	
30	4110	3830	3570	3320	
35	4150	3870	3610	3360	
40	4190	3910	3650	3400	
44	4230	3950	3690	3430	

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3440	3190	2960	2750	
-30	3480	3220	2990	2780	
-25	3510	3260	3020	2810	
-20	3550	3300	3050	2840	
-15	3590	3330	3090	2880	
-10	3630	3370	3130	2910	
-5	3670	3410	3170	2940	
0	3710	3450	3210	2980	
5	3750	3490	3250	3010	
10	3790	3530	3280	3040	
15	3820	3560	3310	3080	
20	3860	3600	3350	3110	
25	3890	3630	3380	3140	
30	3930	3670	3410	3180	
35	3960	3700	3450	3210	
40	4000	3740	3480	3240	
44	4040	3770	3520	3280	

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS					
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS	
-35	3310	3080	2870	2660	
-30	3340	3110	2890	2680	
-25	3380	3140	2920	2710	
-20	3410	3170	2950	2740	
-15	3450	3200	2980	2770	
-10	3480	3240	3010	2800	
-5	3520	3270	3040	2830	
0	3560	3310	3080	2870	
5	3600	3350	3110	2900	
10	3630	3380	3140	2930	
15	3660	3410	3170	2950	
20	3690	3440	3200	2980	
25	3720	3470	3230	3010	
30	3760	3500	3260	3030	
35	3790	3530	3290	3060	
40	3820	3570	3320	3090	
44	3860	3600	3360	3120	

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 6 of 6)

FAA APPROVED
Airplane Flight Manual

MODEL 560
CitationV
Ultra

SERIAL -0260 THRU -0538

SUPPLEMENT 29
**ALLIEDSIGNAL GNS-X_L FLIGHT MANAGEMENT
SYSTEM**

APPROVED BY *EW Pittman*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 2/5/97

SUPPLEMENT 29

GLOBAL GNS-X_L FLIGHT MANAGEMENT SYSTEM

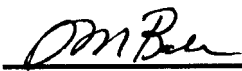
Use the Log of Effective Pages to determine the current status of this supplement. Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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* S29-1 thru S29-2	Revised	3	S29-AA
S29-3 thru S29-7	Revised	2	S29-AA
* S29-8 thru S29-12	Revised	3	S29-AA

APPROVED BY



Ron Rathgeber, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

8/13/01

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S29-AA

Airplanes 560-0401 and on equipped with the Global
GNS-X_L Flight Management System

ALLIEDSIGNAL GNS-X_L FLIGHT MANAGEMENT SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes 560-0401 and on equipped with the AlliedSignal GNS-X_L Flight Management System (P/N 18355-0101-XXXX). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

NOTE

The following are general navigational operational approvals for the GNS-X_L Flight Management System. See the OPERATING LIMITATIONS section for limitations on specific software modification levels.

The GNS-X_L Flight Management System (FMS) is approved under TSO C129 A1/B1/C1 and has been demonstrated capable of, and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating, and receiving usable signals from two of the following navigation sensors (or one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (GNS-X_L with FDE meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
2. North Atlantic (NAT) Minimum Navigation Performance Standards (MNPS) as defined in AC91-49 and AC91-70) - Provided two FMSs are installed and operating, and are receiving usable signals from two of the following navigation sensors:
 - a. GPS (GNS-X_L with FDE meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
3. Enroute and Terminal including RNP5/BRNAV - In accordance with AC20-130A and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from one or more of the following:
 - a. VOR-DME or multiple DMEs.
 - b. GPS.
4. Non-Precision Approach - In accordance with AC20-130A and AC90-94 provided the FMS is receiving usable navigation information from the GPS sensor. The GNS-X_L with FDE has been demonstrated to meet the accuracy specifications for non-precision approach operations (GPS and Overlay, LORAN C, VOR, VOR-DME, TACAN, NDB, NDB-DME, and RNAV).

OPERATING LIMITATIONS

GENERAL

1. The GNS-X_L Operator's Manual, AlliedSignal Part Number 006-08852-0000, revision 0, dated October, 1996 or later appropriate revision, as applicable to the specific software modification status and sensor installation, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_L.

NOTE

The GNS-X_L Operator's Manual is published by AlliedSignal and is generic to many airplane installations. All equipment, options and features in the GNS-X_L Operator's Manual may not be available in the Citation Ultra.

2. Except oceanic, the GNS-X_L is not approved as the primary means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FARs applicable to the specific type of operation (i.e., VOR, DME, etc.).
3. The GNS-X_L, as installed, has been found to comply with the requirements for GPS primary means of navigation in oceanic and remote airspace, including MNPS, when used in conjunction with the FDE prediction program embedded in the GNS-X_L. This does not constitute operational approval.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
5. Navigation within the national airspace system shall not be predicated upon the GNS-X_L during periods of dead reckoning (DR).
6. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the GPS equipment data base. The GPS equipment data base must incorporate the current update cycle.

NOTES

- Not all published approaches are in the FMS database. Instrument approaches must be conducted with the GNS-X_L in the approach mode of operation and RAIM must be available at the Final Approach Fix.
- GNS-X_L approach mode (green APP) must be active and annunciated in the PFD at or prior to the FAF.
- Use of FMS guidance for conducting instrument approaches is prohibited when the ACCURACY WARN sensor message is displayed on the CDU.
- When using FMS guidance for conducting instrument approach procedures that do not include "or GPS" in the title of the published procedure, the flight crew must verify that the procedure specified navaid and associated avionics are operational.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)**NOTES** (Continued)

- IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 - Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the GNS-X_L.
 - When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 - The GNS-X_L can only be used for approach guidance if the reference coordinate datum system for the instrument approach is WGS-84.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e., RW19, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
7. The GNS-X_L is approved for FMS VFR approaches as a VFR pilot aid only. The use of manually inserted runway coordinates is limited to VFR operations only.
 8. When latitude/longitude, transferred from the navigation data base (NDB) is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
 9. The navigation data base (NDB) must be updated to the latest revision every 28 days, updating to be accomplished with the AlliedSignal PCMCIA card. Subscribers will receive PCMCIA cards by mail.
 10. When operating outside the magnetic variation model area (North of 70 degrees North latitude or South of 60 degrees South latitude), the pilot must manually insert magnetic variation.
 11. The fuel management mode is for advisory purposes only and it does not replace the airplane primary fuel flow and fuel quantity systems.
 12. Airplane performance, endurance and range must not be predicated on use of GNS-X_L automatic TAS.
 13. The airplane must be properly maintained with respect to electrical bonding and static wicks.

SOFTWARE MODIFICATION LEVEL 1 (SM01)

1. The GNS-X_L Operator's Manual, Revision 0 dated October 1996 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_L.
2. The software modification level must be verified to be SM01 as displayed on the GNS-X_L initialization page.
3. The GNS-X_L is not approved for non-precision approaches.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

SOFTWARE MODIFICATION LEVEL 2 (SM02)

1. The GNS-X_L Operator's Manual, Revision 0 dated October 1996 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_L.
2. The software modification level must be verified to be SM02 as displayed on the GNS-X_L initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the flight director and CDI displayed to ensure proper track and turn direction.

SOFTWARE MODIFICATION LEVEL 4 (SM04)

1. The GNS-X_L Operator's Manual, Revision 1 dated July 1998 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_L.
2. The software modification level must be verified to be SM04 as displayed on the GNS-X_L initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the EHSI in FULL COMPASS mode.

SOFTWARE MODIFICATION LEVEL 6 (SM06)

1. The GNS-X_L Operator's Manual, Revision 2 dated April 2000 or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the GNS-X_L.
2. The software modification level must be verified to be SM06 as displayed on the GNS-X_L initialization page.
3. Manually (raw data) flown instrument approaches must be accomplished with the EHSI in FULL COMPASS mode.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

AMBER MSG ANNUNCIATOR ILLUMINATED

1. Refer to the GNS-X_L Operator's Manual for the appropriate actions to respond to annunciated messages.

AMBER INTG ANNUNCIATION IN PFD

1. Refer to the GNS-X_L Operator's Manual for the appropriate actions to respond to annunciated messages.

NOTES

- If "NO RAIM" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.
- If "NO RAIM @ DEST" message is displayed, the GNS-X_L has predicted that RAIM may not be available at the destination. The pilot should be prepared to use an alternate IFR approved navigation system or select an alternate airport if RAIM is not available upon arrival at the destination and an instrument approach is required.

CDU 'TUNE' PAGE WITH HONEYWELL RADIO MANAGEMENT UNITS INSTALLED (RMUs INSTALLED)

1. A situation may occur that prevents the crew from enabling autotuning and/or selecting a NAV frequency using the FMS CDU ('TUNE' page 2/3). Should this occur, manually cycle the frequency on the affected navigation radio using the Radio Management Unit (RMU). This will clear the lockup and allow the crew to tune the affected navigation radio using the FMS CDU, if desired.

NOTES

- Manual tuning of NAV receiver frequencies using the RMU is not affected.
- Autotune selection using the panel mounted switches is not affected.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X_L operator's manual for navigation operation (refer to Operating Limitations).

NOTE

When flying an FMS VNAV advisory profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

PERFORMANCE

No Change.

DESCRIPTION

The AlliedSignal GNS-X_L is a comprehensive flight management system, which utilizes a GPS sensor as the primary means of computing precise position and navigational information. A VOR/DME sensor is also incorporated to provide data during degraded GPS operation or complete GPS sensor failure. The FMS advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter DR (dead reckoning) mode and so inform the pilot through a message on the control display unit (CDU).

The GNS-X_L provides lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally processes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

Two annunciator/switches, located on the center instrument panel, can be used to control autotuning of the VHF NAVs by the GNS-X_L. They are labeled NAV 1 MAN TUNE/NAV 1 AUTOTUNE and NAV 2 MAN TUNE/NAV 2 AUTOTUNE. Pressing either switch alternately selects and deselects autotuning capability for that navigation receiver. If the AUTOTUNE light is illuminated in the switch, the FMS may autotune the receiver if it is required for navigation. If AUTOTUNE is extinguished, it cannot select that receiver for autotuning. If the navigation receiver has been selected manually, the GNS-X_L will sense that and disable autotuning until the autotune switch is pressed again. If NAV 1 is selected on either pilots' EHSI, NAV 1 autotuning will be inhibited. NAV 2 autotuning is inhibited in a similar manner.

The GNS-X_L is not designed to fly full SID or STAR procedures. When flying those portions of a SID or STAR that are not tracks between fixes (such as heading-to-intercept type procedures), the airplane should be flown in autopilot or FMS HDG mode or manually, to ensure proper track and turn direction.

NOTE

The MFD map display may be incorrect for the procedures described above. The pilot should refer to the published SID or STAR procedure for correct navigation guidance.

DESCRIPTION (Continued)

The GNS-X_L is approved for non-precision approach operations when the GPS sensor is operating and the limitations presented in this supplement are complied with.

The CDI sensitivity depicted by the GNS-X_L changes with respect to the mode of operation (Enroute, Terminal, and Approach). When the airplane is within 30.0 nm of the destination airport, the GNS-X_L switches from the enroute mode of operation to the terminal mode of operation. The CDI sensitivity on the PFD will change respectively from ± 5.0 nm to ± 1.0 nm for full-scale deflection. When an approach has been loaded into the active flight plan and the airplane is within 2.0 nm of the final approach fix (FAF), the "GNS-X Approach" panel annunciator and the green "APP" annunciation in the PFD will illuminate, indicating that the approach mode is engaged. CDI scaling sensitivity will change respectively from ± 1.0 nm to ± 0.3 nm for full-scale deflection.

NOTES

- With SM01 and SM02 (Software Modification Level 1 and 2) when a holding pattern or procedure turn is initiated, the inbound course is displayed for desired track on the PFD. Additionally, the course arrow will automatically slew to the inbound course. Flight Director steering commands will be correct but CDI indications will appear opposite until established inbound.
- With SM04 (Software Modification Level 4) when a holding pattern or procedure turn is initiated, the course arrow and CDI needle refers to the current or next desired track.

Automatic leg sequencing will cease at the MAP. Missed approach procedures are to be executed as published. After executing the missed approach procedure and en route to the missed approach holding fix, the fix can be automatically selected as the next waypoint by pressing the DIRECT TO button.

NOTE

When initially executing a missed approach procedure, use the autopilot or FMS HDG mode or manually fly the procedure to ensure proper track and turn direction.

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

UNIT -0260 AND ON

SUPPLEMENT 30

TRIMBLE TNL-2000T

GLOBAL POSITIONING SYSTEM

(STAND-ALONE)

APPROVED BY *EW Pittman*

Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL *3/29/97*

24 MARCH 1997

SUPPLEMENT 30

TRIMBLE TNL 2000T GLOBAL POSITIONING SYSTEM (STAND-ALONE)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	24 March 1997

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
S30-1 thru S30-8	Original	0	S15-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S30-AA

Airplanes equipped with Trimble TNL
2000T Global Positioning System (Stand-
Alone)

TRIMBLE TNL 2000T GLOBAL POSITIONING SYSTEM (STAND-ALONE)

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Trimble TNL-2000T Global Positioning System (GPS). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

The Trimble TNL-2000T GPS Navigator consists of an antenna, a receiver including its mounting rack, a Shadin altitude encoder, and a remote AlliedSignal KI-207 course deviation indicator. The primary function of the system is to acquire signals from the GPS system satellites, recover orbital data, make range and Doppler measurements, and process this information in real-time to obtain the user's position, velocity and time.

The Trimble TNL-2000T GPS Navigator meets the accuracy specifications for VFR/IFR Enroute and Terminal Navigation operation within the U.S. National Airspace System in accordance with AC 20-138.

Navigation is accomplished using the WGS-84 (NAD-83) coordinate reference datum. Navigation data is based upon use of only the Global Positioning System operated by the United States of America.

OPERATING LIMITATIONS

GENERAL

1. The Trimble TNL-2000T GPS navigation system, as installed on the Cessna Model 560 Ultra, IS NOT APPROVED FOR USE DURING INSTRUMENT APPROACHES.
2. The Trimble TNL-2000T GPS Navigator Pilot's Guide, P/N 80818, Rev. D, dated 26 February 1996, or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the system.
3. The TNL-2000T must utilize software version 0235.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.

(Continued Next page)

OPERATING LIMITATIONS (Continued)

5. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
6. If not previously defined, the following default settings must be made in the "AUX" menu of the TNL-2000T prior to operation (refer to Pilot's Guide for procedure if necessary).
 - a. Set distance units to "nautical miles" and speed units to "knots".
 - b. Set altitude units to "feet".
 - c. Set map datum to WGS-84 (see note below).
 - d. Set position coordinates to LAT/LON.

NOTE

In some areas outside the United States, datums other than WGS-84 or NAD-83 may be used. If the TNL-2000T is authorized for use by the appropriate airworthiness authority, the required geodetic datum must be set in the TNL-2000T prior to its use for navigation.

7. The "IFR" annunciator light on the TNL-2000T must be illuminated if IFR navigation is predicated on the use of the TNL-2000T GPS.
8. The external CDI must be used as the primary source for course guidance when navigation is predicated on the use of the TNL-2000T GPS.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

1. If Trimble TNL-2000T GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM NOT AVAILABLE" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.

NORMAL PROCEDURES

Normal operating procedures are described in the Trimble TNL-2000T GPS Navigator Pilot's Guide, P/N 80818, Rev. D, dated 26 February 1996, or later appropriate revision.

1. SYSTEM ANNUNCIATOR

A remote annunciator used with the TNL-2000T GPS is located on the instrument panel below the TNL-2000T.

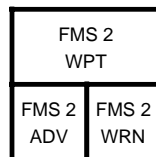


Figure S30-1

- a. GPS Waypoint ("FMS 2 WPT" annunciator) - When the TNL-2000T detects that the airplane is approaching the next programmed waypoint or turn anticipation point, the amber FMS 2 WPT annunciator will flash. Upon passing the waypoint, the annunciator will automatically extinguish.
- b. GPS Advisory ("FMS 2 ADV" annunciator) - Alerts the pilot that an advisory message is waiting. Advisory messages require the pilot's attention or action. Press the MSG key to display the message.
- c. GPS Warning ("FMS 2 WRN" annunciator) - Alerts the pilot that a warning message is waiting. They relate to the accuracy of the position shown or to possible problems with the navigator. Press the MSG key to display the message.

2. EXTERNAL CDI

An AlliedSignal KI207 indicator is installed below the TNL-2000T GPS. The external CDI must be used as the primary source for course guidance when navigation is predicated on the TNL-2000T GPS.

PERFORMANCE

No Change.

DESCRIPTION

Refer to the Trimble TNL-2000T GPS Navigator Pilot's Guide for a complete description of the TNL-2000T system.

FAA APPROVED

Airplane Flight Manual

MODEL 560



Citation V

Ultra

UNIT -0260 AND ON

SUPPLEMENT 31

COCKPIT SPEAKER AUDIO INHIBIT SWITCH

APPROVED BY 
 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 4/14/97

SUPPLEMENT 31

COCKPIT SPEAKER AUDIO INHIBIT SWITCH

Use the Log of Effective Pages to determine the current status of this supplement. Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	14 April 1997

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
S31-1 thru S31-6	Original	0	S31-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S31-AA

Airplanes 560-0260 and on equipped with
Cockpit Speaker Audio Inhibit Switch.

COCKPIT SPEAKER AUDIO INHIBIT SWITCH

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Cockpit Speaker Audio Inhibit Switch. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

GENERAL

1. Both pilots must be using headsets when the overhead cockpit speaker audio is inhibited.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

At initial power up, the Cockpit Speaker Audio Inhibit system defaults to the normal operating mode, indicated by "AUDIO SPK/HPH" illuminated in the switch. This allows normal audio operation through the overhead speakers and the flight crew headsets.

Overhead speaker audio is inhibited by depressing the Cockpit Speaker Audio Inhibit switch and verifying that "AUDIO HPH ONLY" is illuminated in the switch. When the Cockpit Speaker Audio Inhibit switch is activated (i.e. overhead speakers are muted), any one of the following actions will revert the system back to the normal operating mode resulting in "AUDIO SPK/HPH" being illuminated in the switch:

1. Deselecting Cockpit Speaker Audio Inhibit switch.
2. Interruption of DC power.
3. Either the pilot or the copilot selects "MIC OXY MASK" position on the microphone select switch.

NOTE

It is the flight crew's responsibility to verify and maintain vigilance as to which mode is in operation and comply with and understand the limitations associated with operation of the Cockpit Speaker Audio Inhibit System.

PERFORMANCE

No Change.

DESCRIPTION

Enabling the cockpit speaker audio inhibit switch prevents audio broadcast over the cockpit speakers from all avionics radios as well as audio from optional systems such as Traffic Alert and Collision Avoidance System (TCAS) and Ground Proximity Warning System (GPWS). The cockpit speaker audio inhibit switch allows the crew to deselect the overhead speakers, preventing passengers from becoming alarmed in the event a TCAS or GPWS warning activates. Operation of this switch will not affect aural warnings that are external to the audio amplifiers (i.e. gear warning, overspeed, altitude alert, and decision height alert) nor will it alter operation of the headphone audio system.



A Textron Company

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Airplane Flight Manual

MODEL 560 **Citation V** *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 32 **ALLIED SIGNAL MK VII WARNING SYSTEM** **STC ST00466WI**

APPROVED BY


Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

4/1/97

1 APRIL 1997

SUPPLEMENT 32

ALLIED SIGNAL MK VII WARNING SYSTEM STC ST00466WI

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

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Original

1 April 1997

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S32-1 thru S32-10	Original	0	S32-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of airplane configuration codes. The code is located at the bottom of each page, and indicates effectivity by unit number. If no configuration code appears, the page is applicable for all units. This list contains only the configurations which have been incorporated into this basic FAA Approved Airplane Flight Manual.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by unit number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S32-AA

Airplanes equipped with optional
Allied Signal MK VII Warning System
STC ST00466WI

ALLIED SIGNAL MK VII WARNING SYSTEM STC ST00466WI

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Allied Signal MK VII Warning System STC ST00466WI. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The Allied Signal Avionics Inc. MK VII Warning System Pilot's Guide, P/N 060-4108, Revision A or later revision must be available to the flight crew when operating the warning system.

The use of this system is limited to performing an advisory service only. The Mark VII Warning System is not intended to be used as a primary flight instrument.

The MK VII Warning System may not provide warning for flight into precipitous terrain which has little or no preamble terrain.

Mode 6 altitude callouts are provided for stabilized descent in landing configuration when no ILS glideslope exists, glideslope information is not displayed on the pilot's flight instruments, or the aircraft has exceeded 2 dots deviation below the glideslope.

During radar vectoring by ATC, terrain clearance or descent rates may exceed minimum warning thresholds required by GPWS certification standards, possibly resulting in nuisance warnings or alerts.

The MK VII Warning System uses onboard measurement of air mass parameters and aircraft acceleration for the detection of windshear. The system cannot predict severe windshear which may be ahead of the aircraft.

The MK VII Warning System has not been demonstrated to meet the minimum performance standards specified in TSO-C117 for windshear systems. Windshear threshold detection level may be less sensitive than required by the TSO.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

GROUND PROXIMITY WARNING

If a GPWS aural or visual warning is obtained in flight, immediately initiate corrective action to eliminate the cause for warning as follows:

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
1 and 2	"PULL UP"	Execute a positive pull up, apply MCT, and climb at the best possible angle until the warning ceases or terrain is clear.
1	"SINK RATE"	Reduce rate of descent until the warning ceases.
2	"TERRAIN-TERRAIN"	Execute a positive pull up, apply MCT, and climb at the best possible angle until the warning ceases or terrain is cleared.
3	"DON'T SINK"	Establish a positive rate of climb.
4	"TOO LOW,..."	Fly out of the warning envelope (as defined by the Pilot's Information Guide) or reconfigure the aircraft by lowering gear and/or selecting landing flaps as appropriate.

NOTE

To avoid nuisance "TOO LOW, FLAPS" warning during training or other flights, the warning may be inhibited by selecting GPWS FLAP OVRD (amber) on the alternate action GPWS FLAP NORM/GPWS FLAP OVRD switch.

WINDSHEAR WARNING (RED WIND SHEAR LIGHT ON AND AURAL WARNING ACTIVATED)

If a Mode 7 Windshear Warning is obtained in flight by illumination of the red WIND SHEAR light and activation of the siren sound and aural "WINDSHEAR WINDSHEAR WINDSHEAR" warning, immediately initiate corrective action as follows:

1. Thrust - INCREASE to MAXIMUM AVAILABLE.

(Continued Next Page)

EMERGENCY PROCEDURES (Continued)

- Airplane pitch attitude - Smoothly rotate to an initial pitch attitude of 15 degrees.

NOTE

Pitch attitude in excess of 15 degrees may be required for terrain avoidance. Stop rotation immediately if stick shaker or buffet occurs. Flight at intermittent stick shaker may be required to obtain a positive rate of climb.

- Speed brakes - CONFIRM RETRACTED.

AFTER POSITIVE RATE OF CLIMB IS ESTABLISHED WITH AIRSPEED AT LEAST 1.3 V_S

- Flaps - T.O. and APPROACH.

NOTE

If conducting T.O. with flaps 7 degrees or if flaps have been selected UP, do not change flap position.

- Climb Speed - V₂ (takeoff) or V_{APP} (if landing).
- Landing Gear - UP (ground contact no longer probable).
- Flaps - UP.
- Thrust - MAXIMUM CONTINUOUS POWER.

ABNORMAL PROCEDURES

GROUND PROXIMITY ALERTS

If a GPWS aural or visual warning is obtained in flight, immediately initiate corrective action to eliminate the cause for warning as follows:

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
5	"GLIDESLOPE"	Maneuver aircraft to recapture glideslope. This warning may be cancelled (below 1500 ft AGL) by pressing the amber BELOW G/S switch, illuminating the amber G/S CANCELLED annunciator.

WINDSHEAR CAUTION (AMBER WIND SHEAR LIGHT ON AND AURAL ALERT ACTIVATED)

A Mode 7 Windshear Caution is obtained in flight by illumination of the amber WIND SHEAR light and activation of the aural "CAUTION, WINDSHEAR" alert.

The alert occurs during increasing performance conditions (i.e., increasing headwind/decreasing tailwind and/or updraft). The crew should be alerted to the possibility of subsequent significant airspeed loss and downdraft conditions.

GPWS INOP AND/OR WINDSHEAR INOP ANNUNCIATOR ILLUMINATED

Indicates failure of the MK VII computer, and/or loss of one or more of the following inputs: Air Data Computer (ADC), Radio Altimeter, and Angle-of-Attack system.

NORMAL PROCEDURES

BEFORE TAXIING

Add the following step to the end of the procedure:

MK VII Warning System - Momentarily push the white GPWS/WINDSHEAR TEST switch and observe the following:

- a. Amber GPWS INOP and WINDSHEAR INOP annunciators illuminate immediately.
- b. Amber BELOW G/S annunciator illuminates, followed by amber G/S CANCELLED annunciator and aural warning "GLIDESLOPE-GLIDESLOPE".
- c. Red PULL UP annunciator illuminates and one "WHOO WHOO PULL UP" aural warning is produced.
- d. Red WIND SHEAR warning annunciator illuminates, followed by amber WIND SHEAR caution annunciator. A siren sound and the aural warning "WINDSHEAR WINDSHEAR WINDSHEAR" is produced.

NOTE

- GPWS self-test is inhibited in flight at and below 1500 ft AGL.
- A minimum of 30 seconds should elapse between initiating successive MK VII GPWS self-tests to ensure proper computer initialization.

BEFORE LANDING

Add the following NOTE after the step "Speedbrakes - RETRACTED PRIOR TO 50 FEET":

NOTE

- The glideslope warning may be canceled by pressing either of the BELOW G/S warning lights after the airplane has descended below 1000 feet radio altitude on the glideslope. The mode will be rearmed anytime the airplane goes below 50 feet or above 1000 feet radio altitude on the glideslope.
- Do not allow turbine speed RPM to be less than 52%.
- The amber "WINDSHEAR INOP" annunciation may illuminate on landing. Annunciation will reset when airspeed decreases below 80 KIAS.

ALTITUDE AND BANK ANGLE CALLOUTS (MODE 6)

Mode 6 provides callouts of predefined radio altitude (AGL) during descent for landing and aural warning of excessive bank angle during all phases of flight. No visual alerts are associated with Mode 6.

<u>MODE</u>	<u>AURAL WARNING</u>	<u>ACTION</u>
6	"FIVE HUNDRED"	This callout will occur on every approach at 500 ft AGL provided an ILS glideslope is not selected to the pilot's instruments or, if an ILS glideslope is selected and the aircraft is 2 dots deviation below glideslope.
6	"FIFTY", "THIRTY", and "TEN"	These callouts will occur on every approach at 50, 30, and 10 feet AGL.
6	"MINIMUMS-MINIMUMS"	This callout will occur as the aircraft descends through the radio altitude selected by the pilot for decision height (DH) and is available only for DH's between 1000 and 30 ft AGL. This advisory may be inhibited for VFR approaches by selecting decision height to zero.
6	"BANK ANGLE"	This callout advises of excessive bank angle and occurs at 40 to 45 degrees of bank above 150 ft AGL, reducing progressively to 10 degrees of bank at 30 ft AGL altitude. It is repeated if bank angle increases by 20%. When bank angle increases by 40% above the initial callout angle, the callout repeats continually.

PERFORMANCE

No Change.

DESCRIPTION

The MK VII Warning System provides visual and aural warnings in the following modes:

1. Excessive rate-of-descent with respect to terrain (Mode 1).
2. Excessive closure rates to terrain (Mode 2).
3. Negative climb before acquiring a predetermined terrain clearance after takeoff or missed approach (Mode 3).
4. Insufficient terrain clearance based on airplane configuration (a flap override switch is provided to disable the flap configuration input to the system to prevent nuisance warnings when landing with less than full flaps) (Mode 4).
5. Inadvertent descent below the glideslope (Mode 5).
6. Inadvertent descent below minimum descent altitude (Mode 6).
7. Aural Altitude Callouts and Excessive Bank Angle Warning (Mode 6).
8. Windshear Warning and Caution Alerts (Mode 7).

MK VII aural warning priority is indicated below. IMMEDIATE PILOT ACTION IS REQUIRED WHEN ANY OF THESE MESSAGES ARE RECEIVED IN FLIGHT.

MODE 7	Siren sound followed by "WINDSHEAR WINDSHEAR WINDSHEAR" one message for each encounter.
MODE 1	"PULL UP" immediately repeated
MODE 2	"PULL UP" immediately repeated
MODE 2	"TERRAIN-TERRAIN" not repeated
MODE 2	"TERRAIN" repeated every 3 seconds
MODE 4	"TOO LOW, TERRAIN" repeated every 3 seconds
MODE 6	"MINIMUMS-MINIMUMS" one message per approach
MODE 6	"FIVE HUNDRED" one message per approach
MODE 4	"TOO LOW, GEAR" repeated every 3 seconds
MODE 4	"TOO LOW, FLAPS" repeated every 3 seconds
MODE 1 & 5	"GLIDESLOPE", "SINKRATE" repeated every 3 seconds
MODE 1	"SINKRATE" repeated every 3 seconds
MODE 3	"DON'T SINK" repeated every 3 seconds
MODE 5	"GLIDESLOPE" variable delay
MODE 6	"BANK ANGLE" repeated every 3 seconds
MODE 6	"FIFTY", "THIRTY" and "TEN" one message each, per approach
MODE 7	"CAUTION, WINDSHEAR" one message for each encounter.


FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
Ultra

UNIT -0260 AND ON

SUPPLEMENT 33
GREEK REGISTERED AIRPLANES
CERTIFIED FOR STEEP APPROACHES

This Airplane Flight Manual Supplement is approved by the FAA on behalf of the Greek Civil Aviation Authority, Hellenic Republic Ministry of Transportation and Communication

APPROVED BY 
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 7/8/99

SUPPLEMENT 33

GREEK REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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LOG OF EFFECTIVE PAGES

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Configuration Code

S33-1 thru S33-16

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S33-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S33-AA

Greek Registered Airplanes
Certified for Steep Approaches

GREEK REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Greek Registered Airplanes Certified for Steep Approaches. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The nose wheel steering, antiskid system, speed brakes, and thrust reversers must be operative.

LANDING GEAR LIFE LIMITS:

Each full stop landing shall be multiplied by a factor of 1.33 for calculating replacement life of all components.

WEIGHT LIMITATION:

Maximum Landing Weight 12,000 lbs.

LANDING OPERATIONAL LIMITS:

- a. Airspeed - $V_{REF} + 5$ KIAS.
- b. Deliberate Single Engine Approaches are not approved.
- c. Minimum visual guidance intercept is 1,000 ft.
- d. Minimum ILS guidance intercept is 1,800 ft.
- e. Maximum Altitude Limit is 5,000 ft.
- f. Tailwind landings prohibited.

KINDS OF OPERATIONS:

- a. The airplane is approved for manually flown steep approaches in visual or instrument meteorological conditions, with no icing conditions, using an approved visual or ILS glide path reference system.
- b. This supplement does not constitute operational approval to conduct steep approaches.

PERFORMANCE LIMITATIONS:

- a. The data in this supplement are predicated on the use of an approach path angle of 5.5 degrees, and a screen height of 35 feet.
- b. The airplane must be in the "Both Engines Operating" configuration.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

CAUTION

MINIMUM ALTITUDE FOR INITIATING A GO-AROUND IS 40 FEET ABOVE THE AIRFIELD APPROACH MINIMUM.

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

ENGINE FAILURE DURING APPROACH

1. Throttle (Operating Engine) - T.O. Power.
2. Airplane Pitch Attitude - 10 degrees (Go-around mode on flight director for reference).
3. Flaps - T.O. & APPR.

NOTE

The landing gear warning horn cannot be silenced if the landing gear is retracted prior to the flaps reaching T.O. & APPR position.

4. Speed Brakes - CONFIRM RETRACTED.
5. Climb Speed - $V_{REF} + 10$ KIAS minimum.
6. Landing Gear - UP (When positive rate-of-climb is established).
7. Flaps - RETRACT at 400 feet.
8. Climb Speed - V_{ENR} .
9. Thrust - Maximum Continuous Power.

NORMAL PROCEDURES

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF)

1. Seats, seat belts, and shoulder harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. $V_{REF} + 5$ KIAS and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD, and POSITIONED AFT or FORWARD to clear exit doors.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF) (Continued)

7. Flaps - T.O. and APPROACH.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM.
10. Fuel Crossfeed - OFF.
11. Ignition - ON.
12. Landing Gear - DOWN and LOCKED.
13. Antiskid - CHECK ON.
14. Speed Brakes - EXTEND.
15. Flaps - LAND.
16. Landing Lights - As Required.
17. Airspeed - $V_{REF} + 5$ KIAS.
18. Autopilot & Yaw Damper - OFF.
19. Annunciator Panel - CLEAR (except for speed brake).
20. Pressurization - CHECK ZERO DIFFERENTIAL.

NOTE

On intercepting the glide slope, reduce power to idle to initiate descent and then modulate as necessary to maintain glide slope and $V_{REF} + 5$ KIAS approach speed. Descent rate of 750 to 1100 feet/minute (5.5° approach angle).

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

LANDING (Continued)

2. Brakes - APPLY (after touchdown).

CAUTION

IF DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the anti-skid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

3. Thrust Reversers - DEPLOY (after nose wheel on ground).

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY.

NOTE

To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nosewheel is on the ground.

4. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
5. Reverser Power - MAX REVERSE (do not exceed 76.6% fan speed when OAT is below -18°C or 80.1% fan speed at or above -18°C OAT).
6. Thrust Reversers - REVERSER LEVERS TO IDLE REVERSE AT 60 KIAS.

PROCEDURES FOR USE OF STEEP APPROACH LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. The maximum landing weight for all conditions presented in this supplement is 12,000 pounds. If this limitation restricts the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing field length, V_{APP} and $V_{REF} +5$ KIAS, from Figure S27-1, then apply the appropriate factors from the note below. If the available runway length is less than the landing field length required, the airplane landing weight must be reduced.

NOTE

- To obtain performance data for values not listed on the table, use the next higher increment for weight, altitude and temperature.
 - Multiply the landing field length by 1.15 for -1 percent (downhill) runway gradient; by 1.45 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing field length obtained from Figure S27-1.
 - For residual ice on the wing leading edge, multiply the landing field length by 1.30 and add 8 knots to both V_{APP} and $V_{REF} +5$ KIAS speeds.
 - The actual landing distances were multiplied by 1.82 (as allowed with the thrust reversers) to determine the required landing field lengths presented in Figure S27-1.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-36 and 4-37) are for advisory information only.

LANDING FIELD LENGTH - FEET

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3530	3270	3020	2790
-20	3570	3310	3060	2820
-15	3610	3350	3100	2860
-10	3650	3390	3130	2900
-5	3690	3430	3170	2930
0	3740	3470	3210	2970
5	3780	3510	3250	3010
10	3820	3550	3290	3050
15	3860	3580	3320	3080
20	3890	3620	3360	3110
25	3930	3660	3400	3150
30	3970	3690	3430	3180
35	4000	3730	3460	3220
40	4040	3770	3500	3250
45	4090	3800	3540	3290
50	4130	3850	3580	3330
54	4170	3880	3620	3360

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3420	3160	2920	2700
-20	3450	3200	2950	2730
-15	3490	3230	2990	2760
-10	3530	3270	3020	2790
-5	3560	3310	3060	2830
0	3600	3340	3100	2860
5	3640	3380	3130	2900
10	3680	3420	3170	2930
15	3710	3450	3200	2960
20	3750	3480	3230	3000
25	3780	3520	3270	3030
30	3820	3550	3300	3060
35	3850	3580	3330	3090
40	3890	3620	3360	3120
45	3920	3650	3400	3160
50	3960	3690	3440	3190
54	4000	3730	3470	3230

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3300	3050	2820	2620
-20	3330	3080	2850	2640
-15	3370	3120	2880	2670
-10	3400	3150	2910	2700
-5	3440	3180	2950	2730
0	3470	3220	2980	2760
5	3510	3250	3020	2790
10	3540	3290	3050	2820
15	3570	3320	3080	2850
20	3600	3350	3110	2880
25	3630	3380	3140	2910
30	3670	3410	3170	2930
35	3700	3440	3200	2960
40	3730	3470	3230	2990
45	3760	3510	3260	3030
50	3800	3540	3290	3060
54	3830	3570	3330	3090

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3190	2950	2740	2530
-20	3220	2970	2760	2560
-15	3250	3000	2790	2580
-10	3280	3030	2820	2610
-5	3310	3070	2840	2640
0	3340	3100	2870	2670
5	3380	3130	2900	2690
10	3410	3160	2930	2720
15	3430	3190	2960	2740
20	3460	3220	2980	2770
25	3490	3250	3010	2790
30	3520	3270	3040	2820
35	3550	3300	3060	2840
40	3580	3330	3090	2870
45	3610	3360	3120	2900
50	3640	3390	3150	2930
54	3670	3420	3180	2960

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3080	2860	2650	2450
-20	3100	2890	2680	2470
-15	3130	2910	2700	2500
-10	3160	2930	2730	2520
-5	3190	2960	2750	2550
0	3220	2990	2780	2580
5	3250	3010	2800	2600
10	3270	3040	2830	2620
15	3300	3060	2850	2650
20	3330	3090	2870	2670
25	3350	3110	2890	2690
30	3380	3140	2910	2710
35	3400	3160	2940	2730
40	3430	3190	2960	2760
45	3460	3220	2990	2780
50	3490	3250	3020	2810
54	3520	3280	3050	2830

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2990	2780	2570	2370
-20	3010	2800	2590	2390
-15	3030	2820	2610	2410
-10	3050	2840	2630	2430
-5	3080	2860	2660	2460
0	3100	2890	2680	2480
5	3120	2910	2710	2510
10	3150	2930	2730	2530
15	3170	2950	2750	2550
20	3190	2970	2770	2570
25	3220	2990	2790	2590
30	3240	3010	2810	2610
35	3260	3030	2830	2630
40	3280	3050	2850	2650
45	3310	3080	2870	2670
50	3340	3110	2900	2700
54	3360	3130	2920	2720

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE. REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 1 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
1000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

		WEIGHT = 12000 POUNDS			
		VREF + 5 = 99 KIAS		VAPP = 101 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3630	3370 3110 2870		
-20		3680	3410 3150 2910		
-15		3720	3450 3190 2950		
-10		3760	3490 3230 2990		
-5		3810	3530 3270 3030		
0		3850	3580 3320 3070		
5		3890	3620 3360 3110		
10		3940	3660 3400 3150		
15		3980	3700 3430 3180		
20		4020	3740 3470 3220		
25		4060	3780 3510 3260		
30		4100	3810 3550 3290		
35		4140	3850 3580 3330		
40		4180	3890 3620 3370		
45		4220	3930 3660 3400		
50		4270	3980 3700 3440		
52		4290	4000 3730 3460		

		WEIGHT = 11500 POUNDS			
		VREF + 5 = 97 KIAS		VAPP = 99 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3510	3250 3010 2770		
-20		3550	3290 3040 2810		
-15		3590	3330 3080 2840		
-10		3630	3370 3120 2880		
-5		3670	3410 3160 2920		
0		3710	3450 3190 2960		
5		3750	3490 3230 2990		
10		3790	3520 3270 3030		
15		3830	3560 3300 3060		
20		3860	3590 3340 3100		
25		3900	3630 3370 3130		
30		3940	3670 3410 3160		
35		3970	3700 3440 3200		
40		4010	3740 3480 3230		
45		4050	3780 3510 3270		
50		4090	3820 3550 3300		
52		4120	3840 3570 3320		

		WEIGHT = 11000 POUNDS			
		VREF + 5 = 95 KIAS		VAPP = 97 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3390	3140 2900 2690		
-20		3420	3170 2930 2720		
-15		3460	3210 2970 2750		
-10		3500	3240 3000 2780		
-5		3530	3280 3040 2810		
0		3570	3320 3070 2840		
5		3610	3350 3110 2880		
10		3650	3390 3140 2910		
15		3680	3420 3170 2940		
20		3710	3450 3210 2970		
25		3750	3480 3240 3000		
30		3780	3520 3270 3030		
35		3810	3550 3300 3060		
40		3850	3580 3330 3100		
45		3880	3620 3370 3130		
50		3920	3660 3400 3160		
52		3940	3680 3420 3180		

		WEIGHT = 10500 POUNDS			
		VREF + 5 = 93 KIAS		VAPP = 94 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3270	3030 2810 2600		
-20		3300	3060 2840 2630		
-15		3330	3090 2860 2660		
-10		3370	3120 2890 2680		
-5		3400	3160 2920 2710		
0		3440	3190 2950 2740		
5		3470	3220 2990 2770		
10		3500	3260 3020 2800		
15		3540	3290 3050 2830		
20		3570	3320 3080 2850		
25		3600	3340 3110 2880		
30		3630	3370 3130 2910		
35		3660	3400 3160 2930		
40		3690	3430 3190 2960		
45		3720	3470 3220 2990		
50		3760	3500 3260 3030		
52		3770	3520 3280 3040		

		WEIGHT = 10000 POUNDS			
		VREF + 5 = 91 KIAS		VAPP = 92 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3150	2930 2720 2520		
-20		3180	2960 2750 2540		
-15		3210	2980 2770 2570		
-10		3240	3010 2800 2590		
-5		3280	3040 2830 2620		
0		3310	3070 2850 2650		
5		3340	3100 2880 2680		
10		3370	3130 2900 2700		
15		3400	3150 2930 2720		
20		3420	3180 2950 2750		
25		3450	3210 2980 2770		
30		3480	3230 3000 2790		
35		3500	3260 3030 2820		
40		3530	3290 3060 2840		
45		3560	3320 3080 2870		
50		3600	3350 3120 2890		
52		3610	3370 3130 2910		

		WEIGHT = 9500 POUNDS			
		VREF + 5 = 89 KIAS		VAPP = 90 KIAS	
TEMP DEG C		ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-25		3060	2840 2640 2430		
-20		3080	2870 2660 2450		
-15		3100	2890 2680 2480		
-10		3130	2910 2700 2500		
-5		3150	2940 2730 2530		
0		3180	2960 2760 2550		
5		3210	2990 2780 2580		
10		3230	3010 2800 2600		
15		3260	3030 2830 2620		
20		3280	3050 2850 2640		
25		3310	3070 2870 2670		
30		3330	3100 2890 2690		
35		3360	3120 2910 2710		
40		3380	3150 2930 2730		
45		3410	3170 2950 2750		
50		3440	3200 2980 2780		
52		3450	3220 2990 2790		

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 2 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
2000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3740	3470	3210	2970
-20	3780	3510	3250	3010
-15	3830	3550	3290	3050
-10	3880	3600	3340	3090
-5	3920	3640	3380	3130
0	3970	3690	3420	3170
5	4020	3730	3470	3210
10	4060	3780	3510	3250
15	4110	3820	3550	3290
20	4150	3860	3590	3330
25	4190	3900	3630	3370
30	4230	3940	3670	3410
35	4270	3980	3710	3450
40	4320	4030	3750	3490
45	4360	4070	3790	3520
50	4410	4120	3830	3570

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3610	3350	3100	2860
-20	3650	3390	3140	2900
-15	3690	3430	3170	2940
-10	3740	3470	3210	2970
-5	3780	3510	3260	3010
0	3820	3550	3300	3050
5	3870	3600	3340	3090
10	3910	3640	3380	3130
15	3950	3670	3410	3170
20	3990	3710	3450	3200
25	4030	3750	3490	3240
30	4060	3790	3520	3270
35	4100	3820	3560	3310
40	4140	3860	3600	3340
45	4180	3900	3630	3380
50	4230	3950	3680	3420

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3480	3230	2990	2760
-20	3520	3260	3020	2790
-15	3560	3300	3060	2830
-10	3600	3340	3090	2860
-5	3640	3380	3130	2900
0	3680	3420	3170	2930
5	3720	3460	3210	2970
10	3760	3490	3240	3010
15	3790	3530	3280	3040
20	3830	3560	3310	3070
25	3860	3600	3340	3100
30	3900	3630	3380	3140
35	3930	3670	3410	3170
40	3970	3700	3450	3200
45	4010	3740	3480	3240
50	4050	3780	3520	3270

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3360	3110	2880	2680
-20	3390	3140	2910	2700
-15	3430	3180	2940	2730
-10	3460	3210	2970	2760
-5	3500	3250	3010	2790
0	3540	3290	3040	2820
5	3570	3320	3080	2850
10	3610	3360	3110	2880
15	3640	3390	3140	2910
20	3670	3420	3180	2940
25	3710	3450	3210	2970
30	3740	3480	3240	3000
35	3770	3510	3270	3030
40	3800	3540	3300	3060
45	3840	3580	3330	3100
50	3880	3620	3370	3130

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3240	3000	2790	2590
-20	3270	3030	2820	2610
-15	3300	3060	2850	2640
-10	3330	3090	2870	2670
-5	3370	3120	2900	2700
0	3400	3160	2930	2730
5	3430	3190	2960	2750
10	3470	3220	2990	2780
15	3500	3250	3020	2810
20	3520	3280	3040	2830
25	3550	3310	3070	2850
30	3580	3330	3100	2880
35	3610	3360	3130	2900
40	3640	3390	3160	2930
45	3670	3420	3180	2960
50	3710	3460	3220	2990

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3130	2910	2700	2500
-20	3150	2940	2730	2520
-15	3180	2960	2750	2550
-10	3200	2990	2780	2570
-5	3240	3010	2800	2600
0	3270	3040	2830	2630
5	3300	3070	2860	2650
10	3330	3090	2880	2680
15	3350	3110	2900	2700
20	3380	3140	2930	2720
25	3400	3170	2950	2750
30	3430	3190	2970	2770
35	3460	3220	2990	2790
40	3480	3240	3020	2810
45	3510	3270	3040	2840
50	3540	3300	3070	2870

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 3 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
3000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3810	3530	3270	3020
-25	3850	3570	3310	3060
-20	3900	3620	3350	3100
-15	3950	3670	3400	3150
-10	4000	3710	3450	3190
-5	4050	3760	3490	3240
0	4100	3810	3540	3280
5	4150	3860	3580	3320
10	4200	3900	3630	3370
15	4240	3950	3670	3410
20	4290	3990	3710	3450
25	4330	4030	3750	3490
30	4380	4080	3800	3530
35	4420	4120	3840	3570
40	4470	4170	3880	3610
45	4520	4210	3930	3650
48	4550	4250	3960	3690

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3680	3410	3150	2910
-25	3720	3450	3190	2950
-20	3760	3490	3230	2990
-15	3800	3530	3270	3030
-10	3850	3580	3320	3070
-5	3900	3620	3360	3110
0	3940	3670	3400	3160
5	3990	3710	3450	3200
10	4040	3750	3490	3240
15	4080	3790	3530	3270
20	4120	3830	3570	3310
25	4160	3870	3600	3350
30	4200	3910	3640	3390
35	4240	3950	3680	3420
40	4280	3990	3720	3460
45	4330	4040	3760	3500
48	4360	4070	3790	3530

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3540	3280	3040	2810
-25	3580	3320	3070	2840
-20	3620	3360	3110	2880
-15	3660	3400	3150	2910
-10	3700	3440	3190	2950
-5	3750	3480	3230	2990
0	3790	3520	3270	3030
5	3830	3560	3310	3070
10	3870	3600	3350	3110
15	3910	3640	3380	3140
20	3950	3680	3420	3170
25	3990	3710	3460	3210
30	4020	3750	3490	3240
35	4060	3790	3530	3280
40	4100	3820	3560	3310
45	4140	3860	3600	3350
48	4170	3890	3630	3380

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3420	3170	2930	2720
-25	3450	3200	2960	2750
-20	3490	3230	2990	2780
-15	3520	3270	3030	2810
-10	3560	3310	3070	2840
-5	3600	3350	3100	2880
0	3640	3380	3140	2910
5	3680	3420	3180	2940
10	3720	3460	3210	2980
15	3750	3490	3250	3010
20	3790	3530	3280	3040
25	3820	3560	3310	3070
30	3860	3590	3340	3100
35	3890	3630	3380	3140
40	3930	3660	3410	3170
45	3960	3700	3440	3200
48	3990	3720	3470	3230

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3290	3050	2840	2630
-25	3320	3080	2870	2660
-20	3360	3110	2890	2690
-15	3390	3140	2920	2720
-10	3430	3180	2950	2750
-5	3460	3210	2980	2780
0	3500	3250	3010	2810
5	3530	3280	3050	2840
10	3570	3320	3080	2860
15	3600	3350	3110	2890
20	3630	3380	3140	2920
25	3660	3410	3170	2940
30	3690	3440	3200	2970
35	3720	3470	3230	3000
40	3760	3500	3260	3030
45	3790	3530	3290	3060
48	3820	3560	3320	3080

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3180	2960	2750	2540
-25	3200	2980	2770	2570
-20	3230	3010	2800	2590
-15	3260	3040	2820	2620
-10	3290	3060	2850	2650
-5	3330	3090	2880	2670
0	3360	3120	2910	2700
5	3390	3150	2940	2730
10	3420	3180	2960	2760
15	3450	3210	2990	2780
20	3480	3240	3010	2810
25	3510	3260	3030	2830
30	3530	3290	3060	2850
35	3560	3320	3090	2880
40	3590	3350	3110	2900
45	3620	3380	3140	2930
48	3650	3400	3170	2950

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 4 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3920	3640 3370 3120		
-25	3970	3690 3420 3160		
-20	4020	3730 3460 3210		
-15	4070	3780 3510 3250		
-10	4120	3830 3560 3300		
-5	4180	3880 3610 3350		
0	4230	3940 3660 3390		
5	4290	3990 3710 3440		
10	4340	4040 3750 3490		
15	4380	4080 3800 3530		
20	4430	4130 3840 3570		
25	4480	4170 3890 3610		
30	4530	4220 3930 3660		
35	4580	4270 3980 3700		
40	4620	4310 4020 3740		
45	4680	4360 4070 3790		
46	4690	4380 4080 3800		

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3780	3510 3250 3010		
-25	3830	3550 3290 3050		
-20	3870	3600 3340 3090		
-15	3920	3640 3380 3130		
-10	3970	3690 3430 3170		
-5	4020	3740 3470 3220		
0	4070	3790 3520 3260		
5	4120	3830 3560 3310		
10	4170	3880 3610 3350		
15	4210	3920 3650 3390		
20	4250	3960 3690 3430		
25	4300	4000 3730 3470		
30	4340	4050 3770 3510		
35	4380	4090 3810 3550		
40	4430	4130 3850 3590		
45	4480	4180 3900 3630		
46	4490	4190 3910 3640		

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3650	3380 3130 2890		
-25	3690	3420 3170 2930		
-20	3730	3460 3210 2970		
-15	3770	3500 3250 3010		
-10	3820	3550 3290 3050		
-5	3860	3590 3330 3090		
0	3910	3640 3380 3130		
5	3960	3680 3420 3170		
10	4000	3720 3460 3210		
15	4040	3760 3500 3250		
20	4080	3800 3530 3280		
25	4120	3840 3570 3320		
30	4160	3880 3610 3360		
35	4200	3920 3650 3390		
40	4240	3950 3690 3430		
45	4280	4000 3730 3470		
46	4300	4010 3740 3480		

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3510	3260 3010 2800		
-25	3550	3290 3050 2830		
-20	3590	3330 3090 2860		
-15	3630	3370 3120 2890		
-10	3670	3410 3160 2930		
-5	3710	3450 3200 2960		
0	3750	3490 3240 3000		
5	3800	3530 3280 3040		
10	3830	3570 3320 3080		
15	3870	3600 3350 3110		
20	3910	3640 3390 3140		
25	3940	3670 3420 3180		
30	3980	3710 3450 3210		
35	4020	3750 3490 3250		
40	4050	3780 3520 3280		
45	4090	3820 3560 3320		
46	4110	3830 3580 3330		

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3380	3130 2910 2700		
-25	3420	3170 2940 2730		
-20	3450	3200 2970 2760		
-15	3490	3240 3000 2790		
-10	3530	3270 3030 2830		
-5	3560	3310 3070 2860		
0	3600	3350 3110 2890		
5	3640	3390 3140 2920		
10	3680	3420 3180 2950		
15	3710	3450 3210 2980		
20	3740	3490 3240 3010		
25	3770	3520 3270 3040		
30	3810	3550 3300 3070		
35	3840	3580 3340 3100		
40	3870	3620 3370 3130		
45	3910	3650 3400 3170		
46	3920	3660 3410 3180		

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	HEADWINDS 10 KTS 20 KTS 30 KTS		
-30	3260	3030 2820 2610		
-25	3290	3060 2850 2640		
-20	3320	3090 2870 2670		
-15	3350	3110 2900 2690		
-10	3390	3140 2930 2720		
-5	3420	3180 2960 2750		
0	3460	3210 2990 2780		
5	3490	3250 3020 2810		
10	3520	3280 3050 2840		
15	3550	3310 3070 2870		
20	3580	3340 3100 2890		
25	3610	3360 3130 2920		
30	3640	3390 3160 2940		
35	3670	3420 3190 2970		
40	3700	3450 3220 2990		
45	3740	3490 3250 3020		
46	3750	3500 3260 3030		

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S27-1 (Sheet 5 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3990	3700	3430	3180
-30	4040	3750	3480	3220
-25	4090	3800	3530	3270
-20	4150	3850	3580	3320
-15	4200	3910	3630	3360
-10	4260	3960	3680	3410
-5	4310	4010	3730	3460
0	4370	4070	3780	3510
5	4430	4120	3840	3560
10	4480	4170	3890	3610
15	4530	4220	3930	3660
20	4580	4270	3980	3700
25	4640	4320	4030	3750
30	4690	4370	4070	3790
35	4740	4420	4120	3840
40	4790	4470	4170	3880
44	4840	4520	4220	3930

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3850	3570	3310	3060
-30	3900	3620	3350	3100
-25	3940	3660	3400	3150
-20	3990	3710	3440	3190
-15	4040	3760	3490	3240
-10	4100	3810	3540	3280
-5	4150	3860	3590	3330
0	4200	3910	3640	3380
5	4250	3960	3690	3420
10	4300	4010	3730	3470
15	4350	4050	3770	3510
20	4400	4100	3820	3550
25	4440	4140	3860	3590
30	4490	4190	3900	3630
35	4540	4230	3950	3680
40	4590	4280	3990	3720
44	4630	4330	4040	3760

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3710	3440	3190	2950
-30	3750	3480	3230	2980
-25	3800	3530	3270	3030
-20	3840	3570	3310	3070
-15	3890	3610	3350	3110
-10	3930	3660	3400	3150
-5	3980	3710	3440	3190
0	4030	3750	3490	3240
5	4080	3800	3530	3280
10	4120	3840	3580	3320
15	4170	3880	3620	3360
20	4210	3930	3660	3400
25	4250	3970	3700	3440
30	4300	4010	3740	3480
35	4340	4050	3780	3520
40	4380	4090	3820	3560
44	4430	4140	3860	3600

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3570	3310	3070	2840
-30	3610	3350	3100	2880
-25	3650	3390	3140	2910
-20	3690	3430	3180	2940
-15	3740	3470	3220	2980
-10	3780	3510	3260	3020
-5	3820	3560	3300	3060
0	3870	3600	3350	3100
5	3910	3640	3390	3140
10	3950	3680	3430	3180
15	3990	3720	3460	3220
20	4030	3760	3500	3250
25	4070	3800	3540	3290
30	4110	3830	3570	3320
35	4150	3870	3610	3360
40	4190	3910	3650	3400
44	4230	3950	3690	3430

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3440	3190	2960	2750
-30	3480	3220	2990	2780
-25	3510	3260	3020	2810
-20	3550	3300	3050	2840
-15	3590	3330	3090	2880
-10	3630	3370	3130	2910
-5	3670	3410	3170	2940
0	3710	3450	3210	2980
5	3750	3490	3250	3010
10	3790	3530	3280	3040
15	3820	3560	3310	3080
20	3860	3600	3350	3110
25	3890	3630	3380	3140
30	3930	3670	3410	3180
35	3960	3700	3450	3210
40	4000	3740	3480	3240
44	4040	3770	3520	3280

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3310	3080	2870	2660
-30	3340	3110	2890	2680
-25	3380	3140	2920	2710
-20	3410	3170	2950	2740
-15	3450	3200	2980	2770
-10	3480	3240	3010	2800
-5	3520	3270	3040	2830
0	3560	3310	3080	2870
5	3600	3350	3110	2900
10	3630	3380	3140	2930
15	3660	3410	3170	2950
20	3690	3440	3200	2980
25	3720	3470	3230	3010
30	3760	3500	3260	3030
35	3790	3530	3290	3060
40	3820	3570	3320	3090
44	3860	3600	3360	3120

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.


Figure S27-1 (Sheet 6 of 6)

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
Ultra

UNIT -0260 AND ON

SUPPLEMENT 34
LEAD ACID BATTERY INSTALLATION

APPROVED BY 
fa Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 9/18/97

SUPPLEMENT 34

LEAD ACID BATTERY INSTALLATION

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	18 September 1997

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S34-1 thru S34-5/S34-6	Original	0	S34-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S34-AA

Airplanes 560-0260 and on

LEAD ACID BATTERY INSTALLATION

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes 560-0260 and on. This supplement applies to airplanes equipped with a lead acid battery. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

BATTERY OVERHEAT

This procedure does not apply with the lead acid battery installed.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

The minimum battery temperature recommended for start is -12°C (+10°F). The minimum battery voltage for engine start is 24 volts.

PERFORMANCE

No Change.

DESCRIPTION

Optional lead acid battery may be installed in lieu of the nickel-cadmium batteries.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 THRU -0538

SUPPLEMENT 35
GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM
WITH C129 GPS

APPROVED BY *EW Pittman*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 10/24/97

24 OCTOBER 1997

SUPPLEMENT 35

GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM WITH C129 GPS

Use the Log of Effective Pages to determine the current status of this supplement.

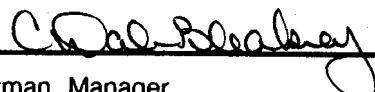
Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	24 October 1997
Revision 1	5 March 1998
Revision 2	10 August 2000

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S35-1 thru S35-5	Revision	2	S35-AA
S35-6 thru S35-7	Revision	1	S35-AA
S35-8 thru S35-9	Original	0	S35-AA
* S35-10	Revision	2	S35-AA
S35-11/S35-12	Original	0	S35-AA

APPROVED BY


for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

8/10/2000

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
SB560-34-61	Navigation - P1000 Phase III Avionics System Software Change	560-0260 thru -0369 and -0371 thru -0538	0	_____

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S35-AA

Airplanes Equipped with Optional Global
GNS-X/ES Flight Management System with
C129 GPS

GLOBAL GNS-X/ES FLIGHT MANAGEMENT SYSTEM WITH C129 GPS

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional Global GNS-X/ES Flight Management System with TSO C129 Global Positioning System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The Global GNS-X/ES Flight Management System (FMS) with C129 GPS is approved under TSO C129 A1/B1/C1 and has been demonstrated capable of, and has been shown to meet, the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (Meets requirements of FAA Notice N8110.60 for primary navigation sensor).
2. North Atlantic Track (NAT) Minimum Navigational Performance Standards (MNPS) Airspace (as defined in AC 91-49 and AC 91-70) - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (Meets requirements of FAA Notice N8110.60 for primary navigation sensor).
3. Enroute and Terminal - In accordance with AC 20-130A, provided it is receiving usable navigation information from one or more of the following:
 - a. GPS.
 - b. One VOR/DME or multiple DMEs.
4. Non-Precision Approach - In accordance with AC 20-130A and AC 90-94 provided the FMS is receiving usable navigation information from the GPS sensor.

OPERATING LIMITATIONS

GENERAL

1. The GNS-X/ES Operator's Manual, Report Number 006-08883-0000, revision 0, dated Apr/97 or later appropriate revision, must be available to the flight crew whenever navigation is predicated on the use of the GNS-X/ES.
2. The GNS-X/ES must have unit P/N 17450-0406 installed and verified by the flight crew (17450-0406 displayed on the bottom left corner of the initialization page).
3. The GNS-X/ES must have the following software modification level installed and verified by the flight crew (displayed on the bottom right corner of the initialization page): SM02 only.
4. The Navigation Data Base (NDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Global-Wulfsberg Systems update disk or equivalent. Update disks will be received by mail (to subscribers) or obtained from authorized Global-Wulfsberg installation centers or update centers.
5. The fuel management mode - fuel flow, fuel performance, and fuel quantity - is for advisory purposes only and must be verified by the flight crew.
6. When operating outside the magnetic variation model area (north of 70 degrees North Latitude or south of 60 degrees South Latitude), the pilot must manually insert magnetic variation.

NAVIGATION

1. The GNS-X/ES is not approved as the sole means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME, etc.).
2. The GNS-X/ES (P/N 17450-0406) as installed, has been found to comply with the requirements for GPS primary means of navigation in oceanic and remote airspace, including NMPS, when used in conjunction with the FDE prediction program embedded in the GNS-X/ES, or external FDE prediction service provided or authorized by Global. This does not constitute operational approval.
3. Navigation within the national airspace system shall not be predicated upon the GNS-X/ES during periods of Dead Reckoning (DR). Following a period of DR, verify FMS position by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
5. The GNS-X/ES is approved for oceanic, enroute, and terminal operations.
6. During Oceanic, Enroute, and Terminal area operation with the FMS "MSG" annunciated on the EADI and with the "ACCURACY WARN" message displayed on the CDU, the flight crew must verify the FMS position using VOR/DME raw data or other appropriate means.
7. With the "POS WARN" (position warning) message active, the GNS-X/ES may not be used for RNAV operation. The GNS-X/ES position must be verified or updated using another means of navigation.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

8. The GNS-X/ES is approved for FMS 'VFR' approaches as a VFR pilot aid only.
9. The use of manually inserted runway coordinates is limited to VFR operations only.
10. VNAV information displayed on the PFD is advisory information only. VNAV mode cannot be coupled to the autopilot or flight director.

NOTE

When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW02, etc), VNAV guidance may not be appropriate for straight-in approach operations.

11. The Pilot's and Copilot's altimeters are the primary altitude reference during all VNAV operations.

APPROACHES

1. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS navigation data base. The FMS data base must incorporate the current update cycle.
2. When using FMS guidance for conducting instrument approach procedures that do not include "or GPS" in the title of the published procedure, the flight crew must verify that the procedure specified navaid and associated avionics are operational.
3. When conducting GPS approaches, RAIM must be available at the Final Approach Fix.
4. "APP" (green) must be annunciated on the PFD at or prior to the FAF.
5. Approaches may be conducted using the HSI display on the PFD, or with the flight director coupled and/or the autopilot engaged.
6. Use of FMS guidance for conducting instrument approach procedures is prohibited when the amber FMS "MSG" annunciator is illuminated on the PFD, and when the "ACCURACY WARN" message is displayed on the CDU.
7. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches using the GNS-X/ES for guidance are prohibited.
8. The MFD map display may not be used for pictorial situational awareness when a DME arc procedure is the active nav leg. The MFD cannot display the curved geometry of DME arcs.
9. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
10. IFR non-precision approach approval is limited to published approaches within the US National Airspace System. Approach to airports in other airspace areas are not approved unless authorized by that appropriate airworthiness authority.
11. When conducting missed approach procedures, operation with the autopilot coupled is prohibited until the flight crew has established a rate of climb that ensures all altitude requirements of the procedure will be met.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER "MSG" ANNUNCIATOR ILLUMINATED

Refer to the appropriate revision of the GNS-X/ES Operator's Manual for information on FMS messages and actions required.

AMBER "INTG" ANNUNCIATION ON PFD

If GNS-X/ES GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

AMBER "MSG" ANNUNCIATOR ILLUMINATED ON THE PFD AND

1. "ACCURACY WARN" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. Verify FMS position by using VOR/DME information (enroute and terminal operations) or other sources as appropriate (oceanic).

NOTE

The "ACCURACY WARN" annunciator indicates the GPS integrity monitoring system has detected a GPS horizontal position error that is outside the alarm threshold for the phase of flight in progress. Except in the case of conducting an instrument approach procedure, the FMS may still be accurate and may be used for navigation provided the flight crew can confirm the position through other means, such as cross-checking the VOR/DME raw data.

- b. Discontinue use of FMS for approach guidance if conducting an instrument approach.
2. "DR" (DEAD RECKONING) DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. Do not predicate navigation on the FMS until the DEAD RECKONING message has extinguished. Following a period of DR, verify FMS position by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
3. "NO RAIM" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. If "NO RAIM" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.

ABNORMAL PROCEDURES (Continued)

4. "NO RAIM @ DEST" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE:
 - a. If "NO RAIM @ DEST" message is displayed, the GNS-X/ES has predicted that RAIM may not be available at the destination. The pilot should be prepared to use an alternate IFR approved navigation system or select an alternate airport if RAIM is not available upon arrival at the destination and an instrument approach is required.

"NO NAV" DISPLAYED ON THE CDU SENSOR MESSAGE PAGE

The sensor has not navigated since system power-up. The MSG annunciator will not flash when this message is present.

CDU "TUNE" PAGE (With Honeywell Radio Management Units (RMUs) installed)

A situation may occur that prevents the crew from enabling autotuning and/or selecting a NAV frequency using the FMS CDU ("TUNE" page). Should this occur, manually cycle the frequency on the affected NAV receiver using the RMU. This will clear the lockup and allow the crew to tune the affected navigation radio using the FMS CDU, if desired.

NOTE

Manual tuning of NAV receiver frequencies using the RMU is not affected.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X/ES operators manual for navigation operation (refer to Operating Limitations).

NOTE

When flying an FMS VNAV advisory profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

PERFORMANCE

No change.

DESCRIPTION

The Global GNS-X/ES is a comprehensive flight management system which utilizes a GPS sensor as the primary means of computing precise position and navigational information. A VOR/DME sensor is also incorporated to provide data during degraded GPS operation or complete GPS sensor failure. The FMS advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter Dead Reckoning (DR) mode and so inform the pilot through a message on the FMS Control Display Unit (CDU).

The GNS-X/ES provides lateral steering information to the pilot through the flight director and Primary Flight Display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

Two annunciator/switches located on the center instrument panel, can be used to control autotuning of the VHF NAVs by the GNS-X/ES. The switches are labeled NAV 1 TUNE/NAV 1 AUTOTUNE and NAV 2 TUNE/NAV 2 AUTOTUNE. Pressing either switch alternately selects and deselects autotuning capability for that navigation receiver. If the AUTOTUNE light is illuminated in the switch, the FMS may autotune the receiver if it is required for navigation. If AUTOTUNE is extinguished, it cannot select that receiver for autotuning. If the navigation receiver has been selected manually, the GNS-X/ES will sense that and disable autotuning until the autotune switch is pressed again. If NAV 1 is selected on either Pilot's PFD, NAV 1 autotuning will be inhibited. NAV 2 autotuning is inhibited in a similar manner.

The GNS-X/ES is not designed to fly full SID or STAR procedures. When flying those portions of a SID or STAR that are not tracks between fixes (such as heading-to-intercept type procedures), the airplane should be flown in autopilot HDG mode or manually to ensure proper track and turn direction.

NOTE

The MFD map display may be incorrect for the procedures described above. The pilot should refer to the published SID or STAR procedure for correct navigation guidance.

(Continued Next Page)

DESCRIPTION (Continued)

When an approach has been loaded into the active flight plan and the aircraft is within 2.0 nm of the Final Approach Fix (FAF), the green APP annunciation in the PFD will flash for 10 seconds then illuminate steady, indicating that the approach mode is engaged.

Automatic leg sequencing will cease at the MAP. Missed approach procedures are to be executed as published. After executing the missed approach procedure and enroute to the missed approach holding fix, the fix can be automatically selected as the next waypoint by pressing the DIRECT TO button.

NOTE

When initially executing a missed approach procedure, use the autopilot HDG mode or manually fly the procedure to ensure proper track and turn direction.

FAA APPROVED
Airplane Flight Manual
MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 36
SAFEFLIGHT N₁ REMINDER

APPROVED BY *EW Pittman*
for
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 11/2/98

SUPPLEMENT 36

SAFEFLIGHT N₁ REMINDER

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	2 November 1998

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S36-1 thru S36-6	Original	0	S36-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S36-AA

Airplanes equipped with
SafeFlight N₁ Reminder

SAFEFLIGHT N₁ REMINDER

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with SafeFlight N₁ Reminder. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

SAFEFLIGHT N₁ REMINDER

The SafeFlight N₁ Reminder is a secondary means of computing approximate N₁. The primary means for determining N₁ settings under all conditions is the approved airplane flight manual.

WARNING

N₁ IS COMPUTED FOR NORMAL OPERATIONS ONLY. CONSULT AIRPLANE FLIGHT MANUAL FOR SINGLE ENGINE OPERATIONS.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

No change.

NORMAL PROCEDURES

SAFEFLIGHT N₁ REMINDER OPERATION

PREFLIGHT

1. Select Anti Ice - AS REQUIRED.
2. Place switch in the TO/GA position.
3. Set air temperature by depressing switch and turning.
4. Read takeoff power on display.

INFLIGHT

1. Place switch in the CLB position to read normal climb power.
2. Place switch in the CRU position to read maximum cruise power.
3. Place switch in the TO/GA position to read go around power.

DESCRIPTION

The SafeFlight N_1 Reminder presents a continuous display of target percent fan speed (N_1) for takeoff, go-around, climb and maximum cruise thrust settings. N_1 is computed based on air data from the digital air data bus along with anti-ice configuration.

PREFLIGHT

Upon initial power-up, the computer performs a self-test. If the results are satisfactory, the display will indicate "888". If the results are unsatisfactory, the display will blank. The display will blank for any failure.

The N_1 Reminder is now ready to accept a selected ground temperature to determine the takeoff N_1 setting.

Place the switch in the center (TO/GA) position. Press and hold the control knob. The display will indicate the ram air temperature (RAT) in degrees celsius. Rotating the pressed control knob CW will increase the displayed temperature. Rotating the pressed control knob CCW will decrease the displayed temperature.

Set the reported airfield temperature on the display. Once the knob is released, the display will indicate the percent N_1 for takeoff based on the selected temperature. If any other mode is selected on the ground, or if there is no N_1 charted data for the anti-ice conditions, the display will indicate "---".

INFLIGHT

After the airplane is inflight, the display will continue to indicate takeoff percent N_1 based on the selected temperature, field elevation and anti-ice until another mode is selected. After another mode is selected, the display will indicate percent N_1 based on RAT and current pressure altitude instead of selected temperature and field elevation for that mode.

Rotating the control knob CCW to the CLB position will display the percent N_1 for normal climb thrust; rotating the control knob CW to the CRU position will display the percent N_1 for maximum cruise thrust; and reselecting the center TO/GA position will display the percent N_1 for go-around when at or below 15,500 feet.

Pushing the control knob in any mode will display the RAT in degrees celsius.

LANDING

After landing, the N_1 display will indicate "888" after one minute.

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V


Ultra


UNIT -0260 AND ON

SUPPLEMENT 37

**FAIRCHILD F1000 SOLID STATE FLIGHT DATA
RECORDER**

STC - ST00637WI

APPROVED BY 

 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 3/9/98

SUPPLEMENT 37

FAIRCHILD F1000 SOLID STATE FLIGHT DATA RECORDER STC - ST00637WI

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	9 March 1998

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S37-1 thru S37-6	Original	0	S37-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S37-AA

Airplanes equipped with optional Fairchild
F1000 Solid State Flight Data Recorder
STC-ST00637WI

FAIRCHILD F1000 SOLID STATE FLIGHT DATA RECORDER STC - ST00637WI

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes equipped with optional Fairchild F1000 Solid State Flight Data Recorder STC - ST00637WI. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

FLIGHT DATA RECORDER FAILURE (FLT DATA RCDR FAIL LIGHT ILLUMINATED)

ADVISORY - Indicates that the flight data recorder is inoperative.

1. Loss of power or other failure detected by the integrity monitoring function illuminates the FLT DATA RCDR FAIL light.

NORMAL PROCEDURES

No Change.

PERFORMANCE

No Change.

DESCRIPTION

The Fairchild F1000 Solid State Flight Data Recorder provides a permanent record of parameters listed in the table below. The data is recorded continuously in digital form onto a crash-survivable solid state chip having sufficient capacity to store the last 25 hours of flight time.

This FDR meets the performance standards of FAA TSO-C124b and Eurocae ED55 and FAR requirements for a FDR installed in airplanes with a seating configuration of 9 or less.

Parameters recorded:

Altitude	Relative Time	Rudder Surface Position
Airspeed	Pitch Attitude	Aileron Surface Position
Vertical Acceleration	Roll Attitude	Elevator Surface Position
Lateral Acceleration	Pitch Trim Position	Flap Position
Magnetic Heading	Thrust Reverser Position	Radio Transmitter Key (1and 2)
		Engine N ₁ Speed (L and R)

FAA APPROVED
Airplane Flight Manual

MODEL 560
CitationV
Ultra

UNIT -0260 AND ON

SUPPLEMENT 38

**ALLIEDSIGNAL KLN 900 GPS
NAVIGATION SYSTEM**

APPROVED BY *Bennett L. Snider*

fgr Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5/21/98

SUPPLEMENT 38

ALLIEDSIGNAL KLN 900 GPS NAVIGATION SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	21 May 1998

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
S38-1 thru S38-9/S38-10	Original	0	S38-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S38-AA

Airplanes 560-0260 and On Equipped with
AlliedSignal KLN 900 GPS Navigation
System

ALLIEDSIGNAL KLN 900 GPS NAVIGATION SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with AlliedSignal KLN 900 GPS Navigation System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The KLN 900 Flight Management System (FMS) is approved under TSO C129 A1, and meets the requirements for the following operations:

1. Oceanic/Remote - As a required Long Range Navigation (LRN) system, (except primary navigation), provided two FMSs are installed and operating, and are receiving usable signals from two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one LRN system):
 - a. GPS (KLN 900 does not meet the requirements of FAA Notice 8110.60 for primary navigation system).
 - b. Inertial Reference System (IRS) (KLN 900 does not interface with IRS).
2. North Atlantic (NAT) Minimum Navigational Performance Standards (MNPS) Airspace (as defined in AC91-49 and AC91-70) - As a required Long Range Navigation system, (except primary navigation), provided two FMSs are installed and operating and are receiving usable signals from two (dual or combination) of the following navigation sensors:
 - a. GPS (KLN 900 does not meet the requirements of FAA Notice 8110.60 for primary navigation sensor).
 - b. Inertial Reference System (IRS) (KLN 900 does not interface with IRS).
3. Enroute and Terminal - In accordance with AC20-130A, provided it is receiving usable navigation information from one or more of the following:
 - a. One VOR/DME or multiple DMEs.
 - b. GPS.
4. Non-Precision Approach - In accordance with AC20-130A and AC90-94 provided the FMS is receiving usable navigation information from the GPS sensor. The KLN 900 has been demonstrated to meet the accuracy specifications for non-precision GPS approach operations within the conterminous United States and Alaska.

NOTE

FAA approval of the KLN 900 does not necessarily constitute approval for use in foreign airspace.

OPERATING LIMITATIONS

1. The KLN 900 GPS Pilot's Guide Part Number 006-08796-0000, dated July 1996 or applicable later revision, as applicable to the specific software modification status and sensor installation, must be immediately available to the flight crew whenever navigation is predicated on the use of the KLN 900 system. The Operational Revision Status (ORS) of the Pilot's Guide must match the ORS level annunciated on the Self Test page.

NOTE

The KLN 900 Pilot's guide is published by AlliedSignal and is generic to many aircraft installations. All equipment options and features in the pilot's guide may not be available in the Citation V installation.

2. The KLN 900 software modification level must be verified to be level 0103 or 0105 as displayed on the KLN 900 STATUS 3 page (STA 3). For KLN 900 GPS with Software Mod Level 0103, the following applies:

WARNING

WHEN OPERATING THE KLN 900 IN OBS MODE, THE COURSE KNOB MUST NOT BE USED TO SET OBS DESIRED COURSE. USING THE COURSE KNOB CAN RESULT IN IMPROPER SETTING OF THE OBS COURSE. SETTING OF THE OBS DESIRED COURSE MUST BE ACCOMPLISHED USING THE OBS INPUT OPTION ON THE KLN 900 MODE PAGE.

3. IFR navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint by reference to currently approved data.
4. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the KLN 900 data base. The KLN 900 data base must incorporate the current update cycle.
5. Instrument approaches must be conducted in the approach mode and RAIM must be available at the final approach fix.
6. To ensure correct steering sensitivity, the approach mode annunciator(s) must be displayed at the final approach fix (FAF) inbound when executing a GPS approach.
7. When using the KLN 900 GPS, additional equipment required for the specific kind of operation, Kinds of Operations Equipment List, or applicable operating rule, must be installed and operable.
8. The airplane must be properly maintained with respect to electrical bonding and static wicks.
9. Fuel management information derived from this system is for advisory purposes only and does not replace the primary fuel flow and fuel quantity systems.
10. The KLN 900 does not include Fault Detection Exclusion (FDE) and is not approved for primary navigation in oceanic and remote airspace (including MNPS) requiring FDE. It may be used as a second required Long Range Navigation system in this airspace.

OPERATING PROCEDURES

The Operating Procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

INADEQUATE IFR SIGNAL ACQUISITION (INVALID FOR IFR USE MESSAGE).

1. If KLN 900 GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

NOTE

- If “RAIM POSITION ERROR” or “RAIM NOT AVAILABLE” message is displayed in the enroute or terminal phase of flight, continue to navigate using GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.
- If RAIM is not available at destination, an alternate IFR approved navigation system must be used at destination or an alternate destination must be selected.
- If “RAIM POSITION ERROR” or “RAIM NOT AVAILABLE” message is displayed while conducting an instrument approach, terminate the approach. Execute a missed approach if required.

MESSAGE (MSG ANNUNCIATOR ILLUMINATED)

1. KLN 900 MSG Button - PRESS.

NOTE

Message will be displayed. A description of KLN 900 messages is outlined in the KLN 900 Pilot's Guide.

NORMAL PROCEDURES

Refer to the AlliedSignal KLN 900 GPS Navigation System Pilot's Guide.

NOTE

If, for any reason, power is removed or interrupted to the Air Data Computer (ADC), TAS, ALT and OAT will not be available for a minimum of 5 minutes while the ADC is warming back up.

PERFORMANCE

No Change.

DESCRIPTION

The KLN 900 can be coupled to the autopilot when FMS is selected on the DC 550 and NAV is selected on the MS 560 Mode selector. A white (armed) or green (captured) LNAV message in the EADI will indicate that the KLN 900 GPS is being coupled to the NAV mode of the autopilot system. An amber waypoint (WPT) annunciator will illuminate prior to waypoints in the KLN 900 active flight plan. The KLN 900 is installed as a second FMS. The FMS button on the display controller will cycle between FMS1 and FMS2.

The approach annunciator indicates the KLN 900 mode of operation while in the approach environment and allows for the manual selection of the APPROACH ARM mode of operation. The APPROACH ARM mode will automatically engage when the airplane is within 30 nm of the destination airport and an approach has been loaded into the active flight plan. When the APPROACH ARM mode is engaged, the FMS switches from the Enroute Mode of operation to the Terminal Mode of operation. The CDI sensitivity on the EHSI will change respectively from ± 5.0 nm to ± 1.0 nm for full scale deflection. The APPROACH ARM mode can be manually activated by pressing the approach annunciator in any phase of flight.

The APPROACH ACTIVE mode cannot be manually selected. The APPROACH ACTIVE mode will engage only when the following criteria are satisfied: the airplane is approximately 2.0 nm from the final approach fix (FAF), the Leg Mode is selected, RAIM is available, the aircraft is heading toward the FAF, and the FAF is the active waypoint. When the APPROACH ARM mode is engaged, the FMS switches from the Terminal Mode of operation to the Approach Mode of operation. CDI sensitivity on the EHSI will change from ± 1.0 nm to ± 0.3 nm for full scale deflection. APP will display in the upper left quadrant of the EHSI. APP will initially flash for 5 to 8 seconds and then remain steady.

At the missed approach point (MAP), the missed approach holding waypoint will not be automatically sequenced. KLN 900 guidance to the missed approach holding waypoint can be initiated by pressing the DIRECT TO button with the missed approach holding waypoint highlighted on the FPL0 page and following the normal KLN 900 DIRECT TO procedures.

Air data, temperature and heading are automatically provided to the KLN 900 via an air data computer (ADC). Absence of these inputs, or improper inputs will not affect the navigational accuracy of the system. Otherwise, data must be manually entered for KLN 900 functions using this information, i.e. TAS, wind computation, range, etc.

(Continued Next Page)

DESCRIPTION (Continued)

KLN 900 calculations using temperature input are based on RAT.

NOTE

When initially executing a missed approach procedure. Use the autopilot HDG mode or manually fly the procedure to ensure proper track and turn direction.

CAUTION

- IT IS THE PILOT'S RESPONSIBILITY TO ENSURE THAT THE AIRPLANE IS PROPERLY MAINTAINED WITH RESPECT TO ELECTRICAL BONDING OF AIRPLANE SURFACES AND THE INSTALLATION OF STATIC DISCHARGE WICKS.
- THE PILOT MUST BE PREPARED TO USE AN ALTERNATE NAVIGATION MEANS SHOULD THE SYSTEM FLAG.

FAA APPROVED
Airplane Flight Manual

MODEL 560
CitationV
Ultra

UNIT -0260 AND ON

SUPPLEMENT 39

**DUAL SAFE FLIGHT ANGLE-OF-ATTACK/
STALL WARNING SYSTEM**

APPROVED BY C.D. Little

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5/19/98

SUPPLEMENT 39

DUAL SAFE FLIGHT ANGLE-OF-ATTACK/ STALL WARNING SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

Date

Original

19 May 1998

LOG OF EFFECTIVE PAGES

Page
Number

Page
Status

Revision
Number

Configuration
Code

S39-1 thru
S39-7/S39-8

Original

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S39-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Unit Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by unit number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Unit Number

S39-AA

Airplanes 560-0260 and On Equipped with
the Dual Safe Flight Angle-of-Attack/Stall
Warning System.

DUAL SAFE FLIGHT ANGLE-OF-ATTACK/ STALL WARNING SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes equipped with the Dual Safe Flight AOA/Stall Warning System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

GENERAL

If neither stick shaker does not operate during the warning system test, or the angle-of-attack system is otherwise inoperative, it must be repaired before flight, except when the airplane is operated in accordance with an approved Minimum Equipment List.

OPERATING PROCEDURES

The Operating Procedures are the same as those in the basic FAA Approved Airplane Flight Manual, except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

ANGLE-OF-ATTACK PROBE HEATER FAILURE (AOA HTR FAIL, LH OR RH LIGHT ON)

Indicates that the angle-of-attack probe heating element has failed.

1. Pitot-Static Switch and LH AOA HTR, RH AOA HTR Circuit Breaker (as appropriate) - CHECK.
2. Leave icing environment.

NOTE

If either AOA probe heater fails and the affected AOA probe becomes iced, the pilot's or copilot's stick shaker may not function.

(Continued Next Page)

ABNORMAL PROCEDURES (Continued)

ANGLE-OF-ATTACK SYSTEM FAILURE (AMBER AOA)

Indicates that a failure exists in the pilot's angle-of-attack and/or stick shaker system which has caused the AOA annunciator to flag. The pilot's stick shaker may be inoperative. Low speed awareness cues in both the pilot's and copilot's PFD will be inoperative.

LH AOA FAIL LIGHT ON

Indicates that a failure exists in the copilot's angle-of-attack and/or stick shaker system which has caused the AOA annunciator to flag. The copilot's stick shaker may be inoperative.

NORMAL PROCEDURES

EXTERIOR INSPECTION, Hot Items check

Item 1g is changed to "Left and Right Angle-of-Attack vanes - FREE and HOT"

COCKPIT INSPECTION

Item 29. Rotary Test Switch - WARNING SYSTEMS CHECKED

- a. LH AOA Test Switch - PRESS, with the Rotary Test Switch in Stick shaker test position. Copilot stick shaker must activate.

PERFORMANCE

No Change.

DESCRIPTION

The Dual Safe Flight Angle-of-Attack (AOA)/Stall Warning System has two independent angle-of-attack vanes located on the left and right sides of the fuselage respectively. The output of each AOA vane goes to a separate AOA/Stall Warning computer. The left AOA vane and computer operates the Copilot's stick shaker only. The right AOA vane and computer operates the Pilot's stick shaker, AOA indexer (as installed), angle-of-attack meter, and the low airspeed awareness displays on both Pilot's and Copilot's primary flight displays.

Both Safe Flight AOA/Stall Warning systems incorporate two modes of operation: Normal mode and Ice mode. On the ground, changing from Normal mode to Ice mode is delayed until after the airplane has been airborne for 150 seconds (+/- 30 s). In flight, switching between modes is immediate and indications change accordingly when engine anti-ice is selected ON or OFF.

NORMAL MODE

Stick shaker activation, angle-of-attack meter, angle-of-attack indexer (as installed) and low airspeed awareness are all referenced to standard airplane stall speeds.

ICE MODE

Ice Mode is activated when either or both engine anti-ice switches are ON. Stick shaker activation, angle-of-attack meter, angle of indexer (as installed) and low airspeed awareness are all referenced to the standard airplane stall speeds plus 5 knots. This is to account for residual airframe ice present during or after an icing encounter.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
V Ultra

SERIAL 560-0260 THRU -0538

SUPPLEMENT 40
REDUCED VERTICAL SEPARATION MINIMUM

APPROVED BY William C Schinstock

Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 3-26-99

SUPPLEMENT 40

REDUCED VERTICAL SEPARATION MINIMUM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	26 March 1999
Revision 1	6 July 1999
Revision 2	7 November 2002

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
* S40-1 thru			
S40-2	Revised	2	S40-AA
S40-3	Revised	1	S40-AA
* S40-4 thru			
S40-6	Revised	2	S40-AA
S40-7/S40-8	Original	0	S40-AA

APPROVED BY William Schenstad
for Ron Rathgeber, Manager
 Aircraft Certification Office
 Federal Aviation Administration
 Wichita, Kansas

DATE OF APPROVAL 11-7-02

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
■ SB560-34-79	Navigation - Reduced Vertical Separation Minimum (RVSM) Operation Modification	560-0260 thru -0525		

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S40-AA

Airplanes 560-0260 thru -0525 incorporating
SB560-34-79 and 560-0526 and On equipped for
operations in RVSM airspace.

REDUCED VERTICAL SEPARATION MINIMUM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes properly equipped and certified for operations in Reduced Vertical Separation Minimum airspace. The information contained herein supplements the information in the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

OPERATIONS AUTHORIZED

This airplane is approved for operations in Reduced Vertical Separation Minimum (RVSM) airspace when required equipment is maintained in accordance with the airplane Maintenance Manual. This does not constitute operational approval. Operational approval must be obtained in accordance with applicable operating rules.

REQUIRED EQUIPMENT

This airplane is approved for operations in Reduced Vertical Separation Minimum (RVSM) airspace when the following equipment is installed and operating normally upon entering RVSM airspace:

1. Pilot and copilot primary altimeters.
2. Autopilot.
3. Altitude Alerter.
4. ATCRBS Transponder.

NOTE

- Any changes to the pitot/static, air data computer, autopilot, altitude alerting and/or transponder systems, or other changes that affect operation of these systems, must be approved by the Wichita FAA Aircraft Certification Office (ACO).

- The standby altimeter is not approved for RVSM operations.

FLIGHT CREW TRAINING

Each operator must ensure compliance with required crew training and operating practices and procedures.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

AIRSPEED LIMITATIONS

Minimum airspeed in RVSM airspace is 150 KIAS.

WEIGHT LIMITATIONS

Minimum weight in RVSM airspace is 10,800 pounds.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

No change.

NORMAL PROCEDURES

EXTERIOR INSPECTION

1. Static Ports and surrounding fuselage skin (LH and RH) - CHECK clean, clear, and no damage (3 each forward of the cabin entry door and 3 each on opposite side of fuselage).

BEFORE TAKEOFF

1. Altimeters (pilot and copilot) - CONFIRM and COMPARE. Altimeters must both indicate departure field elevation within ± 50 feet when set to local altimeter setting. Altimeters must indicate within 75 feet of each other when set to local altimeter setting.

CRUISE

1. Verify A/P in ALT HOLD, unless severe turbulence encountered.
2. Altimeters - CROSSCHECK pilot and copilot altimeters at 1 hour intervals or less. Maximum allowable difference is 200 feet.
3. Transponder - Select XPDR ENC ALT the same as the HSI coupled to the FD/AP (if applicable).

PERFORMANCE

No change.

DESCRIPTION

Operating under Reduced Vertical Separation Minimum (RVSM) permits 1,000 feet vertical separation of aircraft at flight levels from FL290 to FL410. In order to comply with the performance requirements of RVSM, the airplane must have SB560-34-79 incorporated (airplanes 560-0260 and on). The pitot/static system and instruments must be maintained in accordance with the airplane Maintenance Manual Section 34, Navigation, as it pertains to airplanes operating under RVSM rules.

Each operator must ensure compliance with required flight crew training and operating practices and procedures.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 41
PRECISE FLIGHT - AUTOMATIC PULSELITE SYSTEM

APPROVED BY *Bennett L. Sorensen*
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 5/20/98

20 MAY 1998

SUPPLEMENT 41

PRECISE FLIGHT - AUTOMATIC PULSELITE SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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Revision 1	14 December 1998

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* S41-5 thru S41-6	Revised	1	S41-AA

APPROVED BY Bennett L. Swenson

For Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 12/14/98

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by Serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S41-AA

Airplanes 560-0260 and on equipped with
Precise Flight- Automatic Pulselite System

PRECISE FLIGHT - AUTOMATIC PULSELITE SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with Precise Flight - Automatic Pulselite System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

No Change

NORMAL PROCEDURES

BEFORE LANDING

1. Landing Lights - ON.

NOTE

- Both recognition lights must be ON for the Pulselite System to operate.
- The landing lights must be turned ON prior to 300 feet AGL on landing approach to cause the pulsing to stop.
- The Pulselite System is automatically deactivated on the ground, except for systems configured with the optional ground override switch.

GROUND OPERATION (Airplanes equipped with optional ground override switch).

1. Landing Lights - REC/TAXI.
2. Pulselite Override Switch - GND ON (OFF when operating in close proximity to other aircraft where the system may be distracting).

NOTE

- Care must be exercised, especially at night, to minimize pulselight distractions to other pilots while remaining conspicuous during ground operations.
- Moving either or both landing light switches out of REC/TAXI will disable pulselite illumination.
- Selecting Pulselite switch to NORM ON will disable pulselite illumination.

PERFORMANCE

No Change

DESCRIPTION

The Precise Flight, Inc. Automatic Pulselite System provides pulsing of the taxi/recognition lights. The system is automatically activated when both REC/TAXI LIGHTS are selected ON and the airplane is airborne. The Pulselite System is overridden (steady illumination of taxi/recognition lights) when the left main squat switch indicates that the airplane is on the ground. Selecting one, or both, LANDING LIGHTS ON will deactivate the Pulselite System.

The Pulselite System is considered optional equipment and the airplane may be dispatched with the system inoperative. In case of a system malfunction, the PULSE circuit breaker may be pulled to deactivate the system for dispatch.

For Pulselite systems configured with the optional Ground Override switch, an Aerospace Optics switch is installed that allows the user to select between "NORM ON" and "GND ON."

With "GND ON" selected, the pilot has the ability to operate the Pulselite system on the ground, bypassing the left main gear squat switch disable circuit. The pilot must select both Landing Light selectors to REC/TAXI for the Pulselite system to activate. Any other switch configuration for the Landing lights will disable the Pulselite system. Also, turning the Battery switch OFF will deactivate the Pulselite system.

With "NORM ON" selected, the system will operate normally. The Pulselite system always powers up in this mode.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation**V**
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 42
ARGUS 7000 MOVING MAP DISPLAY

APPROVED BY W. C. Schinstock

Everett W. Pittman, Manager
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Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5-29-98

SUPPLEMENT 42

ARGUS 7000 MOVING MAP DISPLAY

Use the Log of Effective Pages to determine the current status of this supplement.

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by Serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S42-AA

Airplanes 560-0260 and on equipped with
Argus 7000 Moving Map Display

ARGUS 7000 MOVING MAP DISPLAY

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with an optional Argus 7000 Moving Map Display. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

GENERAL

1. The Eventide Avionics Argus 7000 Moving Map Display operator's manual, part number 5004, revision 3.06, dated July 8, 1995 or appropriate later revision must be readily available to the flight crew when operating the Argus 7000 Moving Map display.

NOTE

The Argus 7000 operators guide is published by Eventide Avionics and is generic to many aircraft installations. All equipment options and features in the pilot's guide may not be available in the Ultra installation.

2. The Argus 7000 Moving Map Display is not to be utilized as primary flight guidance. The displays are not to be used for conducting instrument approaches or departures. Position accuracy, orientation, and related guidance must be assured by other means of required navigation.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

No Change

NORMAL PROCEDURES

No Change.

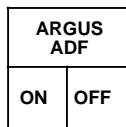
PERFORMANCE

No Change

DESCRIPTION

The Argus 7000 is a pictorial navigation instrument which provides visual and numeric reference of airplane position relative to landing facilities, navigation aids, and special use airspace. The Argus 7000 utilizes information from a standard database contained on an internal memory board, the airplane's primary (pilots) directional gyro, and a previously certified Flight Management System (FMS) to display the pictorial navigation data.

For airplanes equipped with an optional external ADF pointer ON/OFF switch, the functions of the switch are as follows:



ADF ON - Enables ADF pointer when Argus unit is in AC mode and ADF receiver is receiving a valid signal.

ADF OFF - Removes ADF pointer from Argus display.

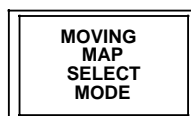
Although the Argus 7000 is also capable of incorporating RMI, Stormscope, and flight planning information, these features may not be available in all installations.

NOTE

The ADF relative bearing pointer and map graphics of the Argus 7000 are not to be used for conducting instrument approaches or departures.

The Argus 7000 map modes allow three different map presentations with selectable ranges: DEParture, ENRoute, and ARRival. The SElect and INFOrmation modes are used to obtain stored information on navigation aids and landing facilities.

For airplanes equipped with optional external SElect and INFOrmation switches, the functions of the switches are as follows:



MOVING MAP REMOTE SELECT - Configures display to SElect Mode.



MOVING MAP REMOTE INFO - Configures display to INFOrmation Mode.

The EMERgency mode displays the nearest landing facilities in a 360° view. The AMEND mode is used to tailor the Argus 7000 displays to the users preferences. The PLAN mode will depict waypoint and course line without map graphics.

DESCRIPTION (Continued)

If the heading input to the Argus 7000 should become invalid, the display will revert to TRACK for graphics screen orientation. Loss of valid LRN navigation data will result in loss of track display, dashing out of respective data, loss of map depiction and navigation data, and display of a "LRN NAV INVALID" message.

NOTE

- When the Argus 7000 is connected to an FMS interface which utilizes an RS-232 data bus, the pictorial display of course lines in the DEP, ENR, and ARR modes may be interrupted if a new waypoint is entered into the existing flight plan on the FMS. This includes addition of a published approach from the FMS database into the existing flight plan. The course lines may be recovered by selecting a waypoint in the existing flight plan.
- To display complete flight plan information when interfaced to an FMS using an Arinc adapter, the Argus 7000 requires program version 4.12 and the Arinc adapter requires program version 1.07.

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

SERIAL -0260 AND ON

SUPPLEMENT 43

**AIRPLANES CERTIFIED TO RUSSIAN
CONFIGURATION**

This Airplane Flight Manual Supplement is approved by the US Federal Aviation Administration (FAA) on behalf of the Russian Aviation Register of the Interstate Aviation Committee (IAC AR).

APPROVED BY Bonnet L. Stevens

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 7/16/99

SUPPLEMENT 43

AIRPLANES CERTIFIED TO RUSSIAN CONFIGURATION

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S43-AA

Airplanes Certified to Russian Configuration

AIRPLANES CERTIFIED TO RUSSIAN CONFIGURATION

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Certified to Russian Configuration. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

All Operating Limitations are the same as the FAA Approved Airplane Flight Manual except as follows:

PROLONGED GROUND OPERATIONS

Ground operations may not be conducted after prolonged cold soak greater than two hours at temperatures colder than -40°C . If the airplane has cold soaked on the ground for more than 2 hours at temperatures colder than -40°C , refer to the maintenance manual procedures to prepare the aircraft for flight.

Refer to maintenance manual procedures to prepare the aircraft for extended cold soak at temperatures colder than -40°C .

A current copy of the Operating Manual Section VII, must be available to the flight crew when operating in CIS airspace.

FUEL LIMITATIONS

Anti-icing additive must be added to all approved fuels not presently containing the additive.

*Boost Pumps - ON; when low fuel lights illuminate or at 185 pounds or less indicated fuel.

The following fuels are approved for use in accordance with Figure S43-1.

COMMERCIAL KEROSENE JET A, JET A-1, JET A-2, JET B, JP-4, JP-5 and JP-8 per CPW 204 specification. CIS fuels RT and TS-1 are also approved.

AVIATION GASOLINE, MIL-G-5572, all grades, permitted for a maximum of 50 hours or 3500 gallons between overhauls providing:

1. Pilot confirms fuel temperature within limits.
2. Maximum ambient air temperature (takeoff) +32°C.
- *3. Boost Pumps - ON.
4. Hours used entered in Engine Logbook. For record keeping purposes, assume one hour of engine operation equals 70 gallons of gasoline.

CAUTION

THESE FUELS, EXCEPT MILITARY JP-4, JP-5 and JP-8, REQUIRE THE ADDITION OF ANTI-ICING ADDITIVE (PER MIL-I-27686 OR MIL-I-85470). REFER TO SECTION III, NORMAL PROCEDURES, FUEL ANTI-ICE ADDITIVES, FOR PROCEDURES TO FOLLOW WHEN BLENDING AND CHECKING FUEL ANTI-ICE ADDITIVES.

NOTE

- JP-4, JP-5, and JP-8 type fuels have anti-icing additive preblended by the refinery. Refer to Section III, Normal Procedures in the basic manual for blending and checking fuel anti-ice additives.
- Jet A-1 requires the addition of anti-ice fuel additives. Maximum concentration of anti-ice additives Fluid I (GOST 8313), Fluid I-M (TU6-10-1458), Fluid TGF (GOST 17477) and Fluid TGF-M (TU6-10-1457) are .30% by volume. Minimum concentration is .10% by volume additive for effective protection. Fluids I-M and TGF-M are a mixture of Fluids I and TGF with Methanol (GOST 2222) in a 1-to-1 proportion.
- Maximum operating time with TS-1 is 1000 hours, all other Limitations on Russian fuel types RT and TS-1 are the same as Jet A.

*To crossfeed, turn boost pump OFF on side opposite selected tank.

FUEL LIMITATIONS (Continued)**FUEL LIMITATIONS**

FUEL GRADE	FUEL SPECIFICATION	MINIMUM FUEL TEMPERATURE (TAKEOFF)	MAXIMUM FUEL TEMPERATURE (TAKEOFF)	MAXIMUM ALTITUDE	FUEL CONTROL DENSITY ADJUSTMENT FOR OPTIMUM ENGINE ACCELERATION
JET A	ASTM-D1655	-35°C	+50°C	45,000 FEET	0.81
JET A-1	ASTM-D1655	-40°C	+50°C	45,000 FEET	0.81
JET B	ASTM-D1655	-45°C	+50°C	45,000 FEET	0.79
JP-4	MIL-T-5624	-54°C	+50°C	45,000 FEET	0.79
JP-5	MIL-T-5624	-40°C	+50°C	45,000 FEET	0.81
JP-8	MIL-T-83133	-40°C	+50°C	45,000 FEET	0.81
RT	GOST-10227-86	-35°C	+50°C	45,000 FEET	0.81
TS-1	GOST-10227-86	-35°C	+50°C	45,000 FEET	0.81
AVIATION GASOLINE	MIL-G-5572 ASTM-D910	-54°C	+32°C	18,000 FEET	0.73

Maximum Asymmetrical Fuel Differential for Normal Operations 200 Pounds
Maximum Emergency Asymmetrical Fuel Differential 600 Pounds

Figure S43-1

TAKEOFF AND LANDING OPERATIONAL LIMITS

Minimum Ambient Temperature -40°C

Side-facing passenger seats shall not be occupied during takeoff and landing.

ALLOWABLE RUNWAY SURFACE CONDITIONS

Runway paved with hard surface.

Contaminated, paved hard surface runway with precipitation. Average and type as follows:

Water:	not to exceed 0.5 inches (12.7 mm) depth
Slush:	not to exceed 0.5 inches (12.7 mm) depth
Loose snow:	not to exceed 2.0 inches (50.8 mm) depth

MAXIMUM CROSSWIND ON CONTAMINATED RUNWAYS

Contaminated, paved hard surface runway with no more than:

Water - 0.5 inches (12.7 mm)	5 Knots (3 M/S)
Slush - 0.5 inches (12.7 mm)	5 Knots (3 M/S)
Loose Snow - 2.0 inches (50.8 mm)	5 Knots (3 M/S)

Contaminated, paved hard surface runway with no more than:

Slush - 0.15 (3.8 mm) inches with temperature above freezing	10 Knots (5 M/S)
Loose Snow - 0.3 (7.62 mm) inches	10 Knots (5 M/S)

Wet, paved hard surface runway with no more than 0.125 inches (3 mm) of water, and braking coefficient of friction (μ) of:

$\mu = 0.3$ (Poor Braking)	5 Knots (3 M/S)
$\mu = 0.4$ (Average Braking)	10 Knots (5 M/S)
$\mu = 0.5$ (Good Braking, Dry Runway or Runway Equivalent to Dry Runway)	20 Knots (10 M/S)

NOTE

- For intermediate values of coefficient of friction (μ), crosswind is to be estimated by interpolation.
- Operation is prohibited on a runway covered with ice at a coefficient of friction $\mu < 0.3$.

REQUIRED EQUIPMENT FOR OPERATION IN THE CIS

In addition to the standard list of equipment approved by the FAA, the following equipment must be installed and operational for operation in CIS airspace.

1. For flights using Visual Flight Rules (VFR):
 - a. Flight Data Recorder installed in compliance with the certification authority's operating rules.
 - b. KHF-950 High Frequency Radio.
2. For flights using Instrument Flight Rules (IFR), the equipment required for VFR Plus:
 - a. Ground Proximity Warning System (GPWS) with BANK ANGLE annunciation.
3. For flights operating in uninhabited areas, a VHF Emergency Radio (P-855A1) with attached instructions must be located in the copilot's seat pouch.

OPERATING PROCEDURES IN THE CIS

The following procedures must be followed when operating in the Commonwealth of Independent States (CIS):

1. The aircraft can fly in CIS airspace on routes covered by ATC ground facilities using RBS (Radar Beacon System) mode.
2. GPS (if installed) is approved only for enroute and terminal navigation, but not as primary navigation means.
3. When operating along routes of ± 5 km width not covered by VOR/DME facilities, the aircraft position must be verified every 60 minutes using any available means, including ATC verification.
4. Weather radar must be displayed on at least one PFD or the MFD at all times.
5. At least one metric altitude display must be operational at all times.

OPERATING PROCEDURES

All operating procedures are the same as the FAA Approved Airplane Flight Manual except as follows :

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

LOW FUEL QUANTITY (FUEL LOW LEVEL LH OR RH LIGHT ON)

To calculate flight time remaining when the LH or RH LOW LEVEL Caution Light and Master Caution illuminate, refer to cruise charts in Section VII of the Airplane Operating Manual.

NORMAL PROCEDURES

ALL ENGINES GO-AROUND

CAUTION

DURING GO-AROUND CLIMB, MONITOR ENGINE TEMPERATURE (ITT), FAN RPM (N_1) AND TURBINE RPM (N_2) TO ENSURE THAT OPERATING LIMITATIONS ARE NOT EXCEEDED.

COLD WEATHER OPERATIONS

COLD SOAK

Operation of the aircraft has been demonstrated after prolonged exposure to ground ambient temperature of -40°C (-40°F). Ground operations after prolonged cold soak greater than two hours may not be conducted at temperatures colder than -40°C. If prolonged cold soak is anticipated, refer to maintenance manual procedures to prepare the aircraft for cold soak. If the airplane has cold soaked on the ground for more than two hours at temperatures colder than -40°C, refer to maintenance manual procedures to prepare the aircraft for flight. The following operational procedures are recommended after cold soak.

1. Use GPU after extended cold soak. If a start is attempted by an external power unit and/or preheat and the starter will not motor to 8 percent N₂ minimum, terminate the starting sequence. Advancing the throttle to idle below 8 percent N₂ can be damaging to the engine and battery. Battery voltage below 11 volts after the start button is pressed indicates a potential for an unsuccessful start.
2. Apply preheat to engines, tailcone, cabin and cockpit. Engine preheating is best accomplished by installing the engine covers and directing hot air through the oil filler access door. A warm battery provides significant benefit and the heater hose can be placed in the tailcone with the door propped as far closed as possible to minimize heat loss. With sufficient hose length, the cabin and cockpit area can be warmed through the pilot's side window.
3. Maximum heat from the air conditioning system is obtained with the right engine operating and the PRESS SOURCE SELECT in GND. Switching the TEMPERATURE CONTROL SELECTOR to MANUAL and selecting MANUAL HOT for 10 seconds ensures that the temperature mixing valve is in the hot position. Turning on the DEFOG FAN and turning the AIR FLOW DIST (bias) valve to CKPT (cockpit) will increase air circulation in the cockpit. Operating the right engine above idle RPM increases temperature and airflow.
4. Most effective overall cabin heating is achieved by selecting the AIR FLOW DISTR (bias) valve to CKPT and the DEFOG FAN to LOW or HI until the cockpit is comfortable. Then move the bias valve toward CABIN and the DEFOG FAN as desired. Warming the cabin first may tend to cause the temperature controller to stabilize before the cockpit warms. This is due to the temperature sensor being located in the cabin.
5. Operating in extremely cold temperatures super cools and reduces the solubility of any water particles in the fuel, increasing the possibility of fuel system icing. The tank and fuel filter drains under each wing should be drained frequently and thoroughly. It is possible for water to settle in the sump and freeze, which would block the drain. Heat should be applied until fuel flows freely. Maintain heat after flow begins to ensure that all particles have melted. Collect the drainage in a clear, clean container to inspect for water globules.

PERFORMANCE

PROCEDURES FOR USE OF APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. Check the maximum landing weight permitted by climb requirements and the brake energy limits (Figure 4-34, if anti-ice systems are OFF; Figures 4-33 and 4-34, if anti-ice systems are ON). If residual ice is on the wing leading edge, apply the appropriate residual ice correction factors from Figure 4-32 to the maximum landing weight determined from Figures 4-33 and 4-34. If these limitations restrict the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing distance, V_{APP} and V_{REF} , from Figure 4-35, then apply the appropriate factors from the note below. If residual ice is on the wing leading edge, apply the residual ice correction factors in accordance with Figure 4-32. If the available runway length is less than the landing field length required, the airplane landing weight must be reduced.

NOTE

- Determine Landing Field Length as follows:

NORMALIZED FRICTION COEFFICIENT		BRAKING CONDITIONS	MULTIPLY LANDING DISTANCE BY
GREATER THAN	0.5	GOOD BRAKING DRY AND EQUIVALENT TO DRY RUNWAY	1.67
LESS THAN OR EQUAL TO AND GREATER THAN	0.5 0.4	AVERAGE BRAKING	1.92
LESS THAN OR EQUAL TO AND GREATER THAN	0.4 0.3	POOR BRAKING	2.60

- Multiply the landing Field Length by 1.15 for -1 percent (downhill) runway gradient, by 1.5 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing field length determined for a level runway
 - For inoperative antiskid system, multiply the landing field length by 1.25.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-36 and 4-37) are for advisory information only.

NOTE

- These procedures apply for normal landings at or below 15,200 pounds. Performance above 15,200 pounds is provided as additional information, for use in an emergency which requires a landing at a weight in excess of the maximum design landing weight of 15,200 pounds.

ADVISORY INFORMATION**PERFORMANCE DATA FOR WET, SLUSH, AND SNOW COVERED RUNWAYS**

The takeoff and landing distance charts presented in Section IV are based on smooth, dry, paved runways. Correction factors for adverse runway conditions are presented below. The takeoff factors presented are based on 15 degrees flaps and anti-ice systems off for weights up through 16,300 pounds. The landing factors are based on full flaps for weights up through 15,200 pounds.

WARNING

THESE CORRECTION FACTORS FOR ADVERSE RUNWAY CONDITIONS ARE APPROXIMATE AND ARE TO BE CONSIDERED MINIMUMS, AS ACTUAL RUNWAY CONDITIONS MAY REQUIRE FACTORS GREATER THAN THOSE LISTED.

**ADVERSE RUNWAY
TAKEOFF AND LANDING FACTORS**

RUNWAY CONDITION	DEPTH OF PRECIPITATION	TAKEOFF	LANDING FIELD LENGTH
		MULTIPLY TAKEOFF FIELD LENGTH BY: (REFER TO NOTE 2)	MULTIPLY LANDING DISTANCE BY: (REFER TO NOTE 3)
WET	LESS THAN 0.01 INCH WATER	1.50	2.07
WATER	0.1 INCH WATER	1.50	3.29
	0.5 INCH WATER	2.40 (REFER TO NOTE 4)	3.29
SLUSH	LESS THAN 0.5 INCH	2.50 (REFER TO NOTE 4)	3.15
LOOSE DRY SNOW	1.0 INCH	3.40 (REFER TO NOTE 5)	4.00
	2.0 INCHES	2.80	3.43

NOTE

1. Takeoffs and landings with actual headwinds exceeding 20 knots or actual tailwinds exceeding 10 knots should be avoided.
2. Normal takeoff V_1 speeds and takeoff distances with 15-degree flaps are determined from Section IV of the FAA Approved Airplane Flight Manual, Figure 4-20 for takeoff.
3. The published limiting maximum tailwind component for this airplane is 10 knots; however, Cessna does not recommend landings on precipitation-covered runways with any tailwind component.
4. Takeoffs with headwinds in water or slush, add 3 knots to V_1 , not to exceed V_R .
5. Takeoffs with tailwinds should not be attempted in snow.

Figure S43-2

EXAMPLE:

The following is an example for determining the takeoff and landing field length for a runway covered with 1 inch of loose dry snow using the correction factors shown in Figure S43-2.

CONDITIONS	TAKEOFF	LANDING
FLAPS	15°	FULL
AMBIENT TEMPERATURE	0°C	0°C
PRESSURE ALTITUDE	2000 FEET	2000 FEET
WEIGHT	12,500 POUNDS	12,000 POUNDS
WIND	10 KNOTS HEADWIND	10 KNOTS HEADWIND
RUNWAY GRADIENT	0%	0%
ANTI-ICE SYSTEMS	OFF	OFF

Operations from a dry paved runway:

As derived from Section IV of the FAA Approved Airplane Flight Manual

From Figure 4-20

Takeoff Field Length = 2430 Feet

From Figure 4-25

Landing Distance = 2150 Feet

Operation from a runway covered with 1 inch of snow:

Takeoff Field Length = $2430 \times 3.40 = 8262$ Feet

Landing Field Length = $2150 \times 4.00 = 8600$ Feet

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 44

**ALLIEDSIGNAL ENHANCED GROUND PROXIMITY
WARNING SYSTEM
WITHOUT TERRAIN AWARENESS DISPLAY**

APPROVED BY *Bennett L. Sorenson*

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 12/11/98

SUPPLEMENT 44

ALLIEDSIGNAL ENHANCED GROUND PROXIMITY WARNING SYSTEM WITHOUT TERRAIN AWARENESS DISPLAY

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	11 December 1998

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S44-1 thru S44-12	Original	0	S44-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S44-AA

Airplanes equipped with optional Allied
Signal Enhanced Ground Proximity
Warning System without Terrain Awareness
Display

ALLIEDSIGNAL ENHANCED GROUND PROXIMITY WARNING SYSTEM WITHOUT TERRAIN AWARENESS DISPLAY

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes equipped with optional Allied Signal Enhanced Ground Proximity Warning System without Terrain Awareness Display. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The AlliedSignal Enhanced Ground Proximity Warning System Pilot's Guide P/N 060-4241-0000 revision A or latest revision must be available to the flight crew when operating the AlliedSignal Enhanced Ground Proximity Warning System (EGPWS). The use of this system is limited to performing a caution/warning function only. The EGPWS is not intended as a primary flight instrument or navigation aid.

The Windshear Warning portion of the system should not be relied upon as the sole source of windshear detection and avoidance. The system utilizes many inputs from other aircraft systems for the detection of windshear, and cannot predict severe windshear which may be ahead of the aircraft. Pilot judgment must be based on airspeed, Angle Of Attack (AOA), sink rate and other factors including the Windshear Warning System.

Pilots are authorized to deviate from their current air traffic control (ATC) clearance to the extent necessary to comply with an EGPWS warning.

The terrain/obstacle database does not include 100% of all terrain, nor does it include 100% of all obstacles. Navigation is not to be predicated upon use of the terrain database.

EGPWS must be INHIBITED by selecting TERR INHIB when within 15 nm of landing at an airport for which any of the following conditions apply:

- a.) The airport has no approved instrument approach procedure.
- b.) The longest runway is less than 3500 feet in length.
- c.) The airport/approach is not listed in AlliedSignal Inc. Document 060-4267-00 Revision A or latest revision. (reference <http://www.alliedsignal.com>).

In the event that the accuracy of aircraft position data (from the flight management system(s)) becomes inadequate for navigation, the terrain awareness alerting and display functions shall be inhibited. This will not affect the basic GPWS functions.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

NOTE

- When an EGPWS CAUTION occurs, adjust the airplane flight path or configuration until the CAUTION ceases.
- If an EGPWS WARNING occurs, immediately initiate and continue a climbing, vertical escape maneuver which will provide maximum terrain clearance capability, until all alerts cease. Only vertical maneuvers are recommended unless operating in visual meteorological conditions (VMC) and/or the pilot determines, based on all available information, that turning in addition to the vertical escape maneuver is the safest course of action.
- When flying under daylight VFR, should a warning threshold be deliberately exceeded or encountered due to specific terrain or operating procedure at certain locations, the warnings may be regarded as cautionary and the approach or other procedure continued, provided visual terrain clearance is maintained.

EMERGENCY PROCEDURES

BASIC GROUND PROXIMITY WARNINGS

The following modes are basic GPWS modes. If any of the following warnings occur, immediately initiate corrective action to eliminate the cause for the warning as follows:

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
2 *	"PULL UP, PULL UP TERRAIN, TERRAIN"	PULL UP (Red / Annunciator)	Execute a vertical escape maneuver (indicates rapidly rising terrain ahead as a function of rate of change in radio altimeter).
3	"DON'T SINK"	PULL UP (Red / Annunciator)	Establish a positive rate of climb (indicates radio altitude loss after takeoff, with gear and flaps not in landing configuration, below 300 foot AGL).

NOTE

- * GPWS Mode 2 will not provide warning for flight into precipitous or very rapidly rising terrain with little or no rising preamble terrain.

EMERGENCY PROCEDURES (Continued)**ENHANCED GROUND PROXIMITY WARNINGS**

The following are enhanced modes based on proximity to database terrain. If any of the following warnings occur, immediately initiate corrective action to clear the terrain as follows:

AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
"TERRAIN - TERRAIN, PULL UP - PULL UP"	PULL UP (Red / Annunciator)	Immediately execute a vertical escape maneuver. (This message indicates less than 30 seconds to impact with terrain which is within 250 to 500 feet below or higher than airplane altitude.)
"OBSTACLE - OBSTACLE, PULL UP - PULL UP"	PULL UP (Red / Annunciator)	Immediately execute a vertical escape maneuver. (This message indicates less than 30 seconds to impact with obstacle which is within 250 to 500 feet below or higher than airplane altitude.)

WINDSHEAR WARNING

WINDSHEAR (Red) - annunciator flashes for 1 second on and 0.5 seconds off. When aural warning "Windshear, Windshear, Windshear" activates, immediately initiate corrective action to eliminate the cause for the warning as follows (Windshear escape flight guidance is not provided):

1. Thrust - INCREASE to MAXIMUM available.
2. Airplane pitch attitude - Smoothly rotate to an initial pitch attitude of 10 degrees (Flight Director Go Around pitch command).

NOTE

Pitch attitude should be increased smoothly and in small increments, bleeding airspeed as necessary to stop the descent. Pitch attitudes in excess of 10 degrees may be required for terrain avoidance. Stop rotation immediately if stick shaker or buffet occurs. Flight at intermittent stick shaker may be required to obtain a positive rate of climb. Optimum performance may be obtained with airplane pitch attitude that results in the Low Speed Awareness (LSA) in the upper half of the amber band.

3. Speed brakes - CONFIRM RETRACTED.
4. Do not retract flaps or landing gear until safe climbout is assured.

AFTER POSITIVE RATE OF CLIMB IS ESTABLISHED WITH AN AIRSPEED OF AT LEAST 1.3 Vs, TOP OF THE WHITE BAND ON THE LSA

5. Flaps - T.O. & APPR, if LAND.
6. Climb Speed - As Required.
7. Landing Gear - UP (ground contact no longer probable).
8. Flaps - As Required.
9. Thrust - As Required.

ABNORMAL PROCEDURES

GPWS INOP (AMBER Annunciator message) - The GPWS system computer has detected a fault or a required aircraft system input has been lost to the GPWS system. All GPWS functions will be inoperative and the annunciations will be inhibited.

WINDSHEAR INOP (AMBER Annunciator message) - The Windshear Warning system computer has detected a fault or a required aircraft system input has been lost to the Windshear Warning system. All Windshear Caution and Warning functions will be inoperative and the annunciations will be inhibited.

TERR NOT AVAIL (AMBER Annunciator message) - The EGPWS is unable to provide enhanced mode warnings.

NOTE

- In the event that the Radio Altimeter is not functioning, the basic GPWS modes (Modes 1 to 6 and Enhanced Terrain Clearance Floor Mode) will not be available. The other enhanced features, however, will be available.
- Any degradation of Radio Altimeter signal can significantly degrade basic GPWS mode operation. Unexplained drop-outs in radio altimeter indication should be investigated.

GROUND PROXIMITY ALERTS

The following modes are basic GPWS modes which are a function of radio altitude. If any of the following warnings occurs, immediately initiate corrective action to eliminate the cause of the warning, as follows:

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
1	"SINK RATE"	- - - -	Reduce rate of descent until the warning ceases (indicates excessive sink rate below 1100 feet AGL in landing configuration).
4A	"TOO LOW, TERRAIN"	GPWS (Amber / Annunciator)	Immediately level off or initiate a climb as required. (This message indicates the airplane has descended below 1100 feet AGL, is not in landing configuration, and airspeed is greater than 190 KIAS.)
4A	"TOO LOW, GEAR"	GPWS (Amber / Annunciator)	Immediately level off, initiate a climb or lower landing gear as required. (This message indicates the airplane has descended below 500 feet AGL, landing gear is not down, and airspeed is below 190 KIAS.)

(Continued on Next Page)

GROUND PROXIMITY ALERTS (Continued)

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
4B **	"TOO LOW, FLAPS"	GPWS (Amber / Annunciator)	Immediately level off, initiate a climb or extend flaps, as required. (This message indicates the airplane has descended below approximately 245 feet AGL, airspeed is below 160 KIAS and flaps are not in the 35° position.)
5	"GLIDESLOPE"	GPWS (Amber / Annunciator)	Maneuver the airplane to recapture the glideslope, go-around, or continue the approach - if visual - as required. (This message indicates the airplane has descended more than approximately 1.3 dots below glideslope on an ILS, is below 1000 feet AGL, and is descending greater than 500 foot per minute.)

NOTES

** If landing with flaps less than 35°, FLAP OVRD must be selected to prevent inappropriate "TOO LOW, FLAPS" warning.

ENHANCED GROUND PROXIMITY ALERTS

The following are Enhanced GPWS modes. If any of the following warnings occur, immediately initiate corrective action to eliminate the cause of the warning, as follows:

AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
"TOO LOW, TERRAIN"	GPWS (Amber / Annunciator)	Immediately level off, climb or continue (if visual) as required. (This message indicates the airplane has passed through the EGPWS minimum terrain clearance floor, based on proximity to nearest airport.)
"CAUTION-TERRAIN, CAUTION-TERRAIN"	GPWS (Amber / Annunciator)	Turn or initiate a vertical escape maneuver to avoid terrain. (This message indicates the airplane is within 30 to 60 seconds of impact with terrain which is within 250 to 500 feet below or higher than airplane altitude. This message will repeat every 7 seconds.)
"CAUTION - OBSTACLE, CAUTION - OBSTACLE"	GPWS (Amber / Annunciator)	Turn or initiate a vertical escape maneuver to avoid obstacles. (This message indicates the airplane is within 30 to 60 seconds of impact with obstacles which is within 250 to 500 feet below or higher than airplane altitude. This message will repeat every 7 seconds.)

ADVISORY CALLOUTS (MODE 6)

Mode 6 provides the following advisory callouts. No visual alert is associated with Mode 6.

MODE	AURAL WARNING	ACTION
6	"FIVE HUNDRED"	This callout will occur on every approach at 500 ft AGL provided an ILS glideslope is not selected to the pilot's instruments, or if an ILS glideslope is selected and the aircraft is 2 dots or more below glideslope.
6	"MINIMUMS"	This callout will occur on every approach when the radio altitude is equal to the value for decision height entered.
6	"BANK ANGLE, BANK ANGLE"	This callout alerts the pilot to excessive bank angles. The bank angle that causes this alert varies linearly from 10° at 30 feet AGL to 40° at 150 feet AGL to 55° at 2450 feet AGL.

NORMAL PROCEDURES

COCKPIT PREPARATION

Warning Systems - CHECK/OFF.

GROUND PROXIMITY AND WINDSHEAR WARNING SYSTEM

NOTE

GPWS self-test is inhibited in flight.

1. Flight Management System (FMS) - ON.
2. GPWS/WINDSHEAR TEST switch/annunciator - PRESS & HOLD for <2 seconds.
 - a. GPWS INOP, WINDSHEAR INOP, TERR NOT AVAIL annunciators illuminate.
 - b. Aural "GLIDESLOPE" is pronounced and amber GPWS G/S annunciator illuminates.
 - c. Amber CANCELLED annunciator (below GPWS G/S annunciator) illuminates.
 - d. Aural "PULL UP" is pronounced and red PULL UP annunciator illuminates.
 - e. Aural "WINDSHEAR - WINDSHEAR - WINDSHEAR" is pronounced and red WINDSHEAR annunciator illuminates, followed by the amber WINDSHEAR INOP annunciator illuminating.
 - f. Aural "TERRAIN - TERRAIN, PULL UP - PULL UP" is pronounced and red PULL UP annunciator is illuminated.
 - g. Amber GPWS annunciators illuminate and extinguish.

(Continued on Next Page)

EGPWS MODE SELECTIONS

EGPWS modes are selected from the various bezel button menus as follows:

- **BELOW G/S CANCEL** - The **BELOW GLIDESLOPE** warning may be cancelled by pressing GPWS G/S (switch/annunciator).
- **GPWS FLAP OVRD** - To avoid nuisance “TOO LOW, FLAPS” warning during training or other flights during landings of flaps less than 35°, the warning may be inhibited by pressing the GPWS FLAP OVRD (switch/annunciator).
- **TERRAIN INHIBIT** - The terrain inhibit function can be enabled by selecting **TERR INHIB** (switch/annunciator). When terrain inhibit is selected, the ‘Enhanced’ GPWS warnings are inhibited. The basic GPWS Modes 1-6 and windshear Mode 7 will remain active. Selecting this mode will illuminate the **TERR INHIB** annunciator.

DESCRIPTION

The Enhanced Ground Proximity Warning System provides visual and aural warnings in the following Basic GPWS Modes:

1. Excessive rate-of-descent with respect to terrain (Mode 1).
2. Excessive closure rates to terrain (Mode 2).
3. Negative climb before acquiring a predetermined terrain clearance after takeoff or missed approach (Mode 3).
4. Insufficient terrain clearance based on the airplane configuration (a flap override switch is provided to disable the flap configuration input to the system to prevent nuisance warnings when landing with less than full flaps) (Mode 4).
5. Inadvertent descent below glideslope (Mode 5).
6. Minimums callout upon reaching DH (Mode 6).
7. **SMART 500** callout - Altitude callout at 500 AGL (Mode 6).
8. Excessive bank angle alerting (Mode 6).
9. Windshear Warning and Windshear Caution Alerts (Mode 7).

In addition, the Enhanced Ground Proximity Warning System provides the following terrain map enhance modes:

1. Terrain Clearance Floor Exceedance.
2. “Look-Ahead” Cautionary Terrain and obstacle Alerting and Warning Awareness.

(Continued Next Page)

DESCRIPTION (continued)

Aural warning priority is indicated below. IMMEDIATE PILOT ACTION IS REQUIRED WHEN ANY OF THESE MESSAGES ARE RECEIVED IN FLIGHT.

Mode 7 Windshear	"WINDSHEAR, WINDSHEAR, WINDSHEAR" one message per encounter.
Mode 1 Pull Up	"PULL UP" immediately repeated.
Mode 2 Pull Up Preface	"TERRAIN-TERRAIN" not repeated.
Mode 2 Pull Up	"PULL UP" immediately repeated.
Enhanced Terrain Awareness Preface	"TERRAIN-TERRAIN" immediately repeated.
Enhanced Terrain Awareness Warning	"PULL UP".
Obstacle Preface - Obstacle Warning	"OBSTACLE - OBSTACLE".
Mode 2 Terrain	"TERRAIN".
Mode 6 Minimums	"MINIMUMS".
Enhanced Terrain Awareness Caution	"CAUTION TERRAIN (Pause) CAUTION TERRAIN (7 Second Pause)".
Obstacle Awareness Caution	"CAUTION - OBSTACLE".
Mode 4 Too Low Terrain	"TOO LOW TERRAIN".
TCF Too Low Terrain	"TOO LOW TERRAIN".
Mode 6 Altitude	"FIVE HUNDRED" one message per approach.
Mode 4 Gear	"TOO LOW, GEAR" repeated twice, unless terrain clearance continues to decrease.
Mode 4 Flaps	"TOO LOW, FLAPS" repeated twice, unless terrain clearance continues to decrease.
Mode 1 Sinkrate	"SINKRATE - SINKRATE" one message.
Mode 3 Don't Sink	"DON'T SINK" repeated twice, unless terrain clearance continues to decrease.
Mode 5 Glideslope	"GLIDESLOPE" variable delay, more frequent and louder if condition worsens.
Mode 6 Bank Angle	"BANK ANGLE - BANK ANGLE"

NOTE

EGPWS aural alerts and warnings above will override all other aural warnings except overspeed.

PERFORMANCE

No Change.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 45
FLOOD COOLING SYSTEM

APPROVED BY *EW Pittman*
fa
Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 11/2/98

SUPPLEMENT 45

FLOOD COOLING SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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Original	2 November 1998

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S45-1 thru S45-5/S45-6	Original	0	S45-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S45-AA

Flood Cooling System

FLOOD COOLING SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes equipped with optional Flood Cooling System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. Operation of the Flood Cooling System is prohibited above 10,000 feet pressure altitude.
2. Not to be used for cabin heating.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

NORMAL PROCEDURES

Flood Cooling Switch - ON (below 10,000 feet).

DESCRIPTION

The Flood Cooling System provides an air outlet grill on the upper aft pressure bulkhead to supply a high-volume flow of conditioned bleed air to flood the cabin, for faster and more efficient cooling. The system is controlled by an ON-OFF switch on the environmental control panel. When the switch is in the ON position, conditioned bleed air is diverted through a line in the tailcone to an axial flow blower on the top of the aft pressure bulkhead, then to the air outlet grill. The system can be used during ground operation, and in flight below 10,000 feet.

FAA APPROVED

Airplane Flight Manual

MODEL 560

CitationV

Ultra

SERIAL -0260 AND ON

SUPPLEMENT 46

**ALLIEDSIGNAL SOLID STATE FLIGHT DATA RECORDER
WITH TELEDYNE MINIATURE FLIGHT DATA
ACQUISITION UNIT**

APPROVED BY




Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL

1/6/99

6 JANUARY 1999

SUPPLEMENT 46

ALLIEDSIGNAL SOLID STATE FLIGHT DATA RECORDER WITH TELEDYNE MINIATURE FLIGHT DATA ACQUISITION UNIT

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	6 January 1999

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S46-1 thru S46-6	Original	0	S46-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S46-AA

Airplanes equipped with optional AlliedSignal
Solid State Flight Data Recorder with Teledyne
Miniature Flight Data Acquisition Unit

ALLIEDSIGNAL SOLID STATE FLIGHT DATA RECORDER WITH TELEDYNE MINIATURE FLIGHT DATA ACQUISITION UNIT

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes equipped with optional AlliedSignal Solid State Flight Data Recorder with Teledyne Miniature Flight Data Acquisition Unit. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. This installation meets the requirements of JAR-OPS 1.715. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No Change.

OPERATING PROCEDURES

The operating procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

FLIGHT DATA RECORDER FAILURE (FLT DATA RCDR FAIL LIGHT ILLUMINATED)

ADVISORY - Indicates that the flight data recorder is inoperative.

1. Loss of power or other failure detected by the integrity monitoring function will illuminate the FLT DATA RCDR FAIL light.

NORMAL PROCEDURES

No Change.

PERFORMANCE

No Change.

DESCRIPTION

The AlliedSignal Solid State Flight Data Recorder with Teledyne Miniature Flight Data Acquisition Unit (MFDAU) provides a permanent record of multiple parameters. The last 25 hours of flight data are recorded continuously in digital form onto a crash-survivable, non-volatile memory device. The Teledyne MFDAU samples all input signals and formats them into a continuous 64 words-per-second serial data stream per ARINC 573/717 format. All parameters are recorded at least once every 4 seconds. Some parameters are recorded at a higher rate. All parameters are recorded in accordance with JAR OPS 1.715.

Recorded Parameters are:

Time	AFCS Mode and Engagement Status
Pressure Altitude	Barometric Setting
Indicated Airspeed	Selected Altitude
Heading	Selected Speed
Normal Acceleration	Selected Mach
Longitudinal Acceleration	Selected Vertical Speed
Lateral Acceleration	Selected Heading
Radio Transmission Keying	Selected VOR Course
Fan Speed for each engine	Selected Decision Height
Flap Position	EFIS (PFD) Display Formats
Thrust Reverser position	MFD Display Formats
Speedbrakes position	Pitch Attitude
Ram Air Temperature	Roll Attitude

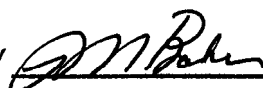

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 47

**ALLIEDSIGNAL ENHANCED GROUND PROXIMITY
WARNING SYSTEM
WITH TERRAIN AWARENESS DISPLAY**

APPROVED BY 
 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 3/15/99

SUPPLEMENT 47

ALLIEDSIGNAL ENHANCED GROUND PROXIMITY WARNING SYSTEM

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Supplement Status

Date

Original

15 March 1999

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Page	Page Status	Revision Number	Configuration Code
S47-1 thru S47-13/S47-14	Original	0	S47-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S47-AA

Airplanes equipped with optional Allied
Signal Enhanced Ground Proximity
Warning System With Terrain Awareness
Display

ALLIEDSIGNAL ENHANCED GROUND PROXIMITY WARNING SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes equipped with optional Allied Signal Enhanced Ground Proximity Warning System With Terrain Awareness Display. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The AlliedSignal Enhanced Ground Proximity and Windshear Warning System Pilot's Guide Part No. 060-4241-0000 Revision A or later revision, must be available to the flight crew when operating the EGPWS.

The use of this system is limited to performing a caution/warning function only. The AlliedSignal Enhanced Ground Proximity Warning System (EGPWS) is not intended as a primary flight instrument or navigation aid.

The Windshear Warning portion of the system should not be relied upon as the sole source of windshear detection and avoidance. The system utilizes many inputs from other aircraft systems for the detection of windshear, and cannot predict severe windshear which may be ahead of the aircraft. Pilot judgment must be based on airspeed, Angle Of Attack (AOA), sink rate and other factors including the Windshear Warning System.

Pilots are authorized to deviate from their current air traffic control (ATC) clearance to the extent necessary to comply with an EGPWS warning.

The terrain display is intended to serve as a situational awareness tool only. The terrain/obstacle database does not include 100 percent of all terrain, nor does it include 100% of all obstacles. Navigation is not to be predicated upon use of the terrain database display.

The terrain display must be INHIBITED by selecting TERR INHIB when using QFE as altitude reference.

EGPWS must be INHIBITED by selecting TERR INHIB when within 15 nm of landing at an airport for which any of the following conditions apply:

- a.) The airport has no approved instrument approach procedure.
- b.) The longest runway is less than 3500 feet in length.
- c.) The airport/approach is listed in excepted airports in AlliedSignal Avionics Inc. Document 060-4267-00 Revision A or latest revision. (reference <http://www.alliedsignal.com>).

In the event that the accuracy of aircraft position data (from the flight management system(s)) becomes inadequate for navigation, the terrain awareness alerting and display functions shall be inhibited. This will not affect the basic GPWS functions.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

NOTE

- When an EGPWS CAUTION occurs, adjust the airplane flight path or configuration until the CAUTION ceases.
- If an EGPWS WARNING occurs, immediately initiate and continue a climbing, vertical escape maneuver which will provide maximum terrain clearance capability, until all alerts cease. Only vertical maneuvers are recommended unless operating in visual meteorological conditions (VMC) and/or the pilot determines, based on all available information, that turning in addition to the vertical escape maneuver is the safest course of action.
- When flying under daylight VFR, should a warning threshold be deliberately exceeded or encountered due to specific terrain or operating procedure at certain locations, the warnings may be regarded as cautionary and the approach or other procedure continued, provided visual terrain clearance is maintained.

EMERGENCY PROCEDURES

BASIC GROUND PROXIMITY WARNINGS

The following modes are basic GPWS modes. If any of the following warnings occur, immediately initiate corrective action to eliminate the cause for the warning as follows:

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
2 *	"PULL UP, PULL UP TERRAIN, TERRAIN"	PULL UP (Red / PFD ADIs)	Execute a vertical escape maneuver (indicates rapidly rising terrain ahead as a function of rate of change in radio altimeter).
3	"DON'T SINK"	PULL UP (Red / PFD ADIs)	Establish a positive rate of climb (indicates radio altitude loss after takeoff, with gear and flaps not in landing configuration, below 300 foot AGL).

NOTE

- * GPWS Mode 2 will not provide warning for flight into precipitous or very rapidly rising terrain with little or no rising preamble terrain.

EMERGENCY PROCEDURES (Continued)

ENHANCED GROUND PROXIMITY WARNINGS

The following are enhanced modes based on proximity to database terrain. If any of the following warnings occur, immediately initiate corrective action to clear the terrain as follows:

AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
"TERRAIN - TERRAIN, PULL UP - PULL UP"	PULL UP (Red / PFD ADIs)	Immediately execute a vertical escape maneuver. (This message indicates less than 30 seconds to impact with terrain which is within 250 to 500 feet below or higher than airplane altitude.)
"OBSTACLE - OBSTACLE, PULL UP - PULL UP"	PULL UP (Red / PFD ADIs)	Immediately execute a vertical escape maneuver. (This message indicates less than 30 seconds to impact with terrain which is within 250 to 500 feet below or higher than airplane altitude.)

WINDSHEAR WARNING

WIND SHEAR (Red) - message flashes for 1 second on and 0.5 seconds off in the PFDs ADI sphere. When a warning and siren aural "Windshear, Windshear, Windshear" warning activate, immediately initiate corrective action to eliminate the cause for the warning as follows. Windshear escape flight guidance is not provided.

1. Thrust - INCREASE to MAXIMUM available.
2. Airplane pitch attitude - Smoothly rotate to an initial pitch attitude of 10 degrees (Flight Director Go Around pitch command).

NOTE

Pitch attitude should be increased smoothly and in small increments, bleeding airspeed as necessary to stop the descent. Pitch attitudes in excess of 10 degrees may be required for terrain avoidance. Stop rotation immediately if stick shaker or buffet occurs. Flight at intermittent stick shaker may be required to obtain a positive rate of climb. Optimum performance may be obtained with airplane pitch attitude that results in the Low Speed Awareness (LSA) in the upper half of the amber band.

3. Speed brakes - CONFIRM RETRACTED.
4. Do not retract flaps or landing gear until safe climbout is assured.

AFTER POSITIVE RATE OF CLIMB IS ESTABLISHED WITH AN AIRSPEED OF AT LEAST 1.3 Vs, TOP OF THE WHITE BAND ON THE LSA

5. Flaps - T.O. & APPR, if LAND.
6. Climb Speed - As Required.
7. Landing Gear - UP (ground contact no longer probable).
8. Flaps - As Required.
9. Thrust - As Required.

ABNORMAL PROCEDURES

GPWS FAIL (AMBER message in MFD) - The GPWS system computer has detected a fault or a required aircraft system input has been lost to the GPWS system. All GPWS functions will be inoperative and the annunciations will be inhibited.

WSHR FAIL (AMBER message in MFD) - The Windshear Warning system computer has detected a fault or a required aircraft system input has been lost to the Windshear Warning system. All Windshear Caution and Warning functions will be inoperative and the annunciations will be inhibited.

TERR FAIL (AMBER message in MFD) - The EGPWS is unable to display terrain or provide enhanced mode warnings.

NOTE

- In the event that the Radio Altimeter is not functioning, the basic GPWS modes (Modes 1 to 6 and Enhanced Terrain Clearance Floor Mode) will not be available. The other enhanced features, however, will be available.
- Any degradation of Radio Altimeter signal can significantly degrade basic GPWS mode operation. Unexplained drop-outs in radio altimeter indication should be investigated.

GROUND PROXIMITY ALERTS

The following modes are basic GPWS modes which are a function of radio altitude. If any of the following warnings occurs, immediately initiate corrective action to eliminate the cause of the warning, as follows:

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
1	"SINK RATE"	- - - -	Reduce rate of descent until the warning ceases (indicates excessive sink rate below 1100 feet AGL in landing configuration).
4A	"TOO LOW, TERRAIN"	GPWS (Amber / PFD ADIs)	Immediately level off or initiate a climb as required. (This message indicates the airplane has descended below 1100 feet AGL, is not in landing configuration, and airspeed is greater than 190 KIAS.)
4A	"TOO LOW, GEAR"	GPWS (Amber / PFD ADIs)	Immediately level off, initiate a climb or lower landing gear as required. (This message indicates the airplane has descended below 500 feet AGL, landing gear is not down, and airspeed is below 190 KIAS.)

(Continued on Next Page)

GROUND PROXIMITY ALERTS (Continued)

MODE	AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
4B **	"TOO LOW, FLAPS"	GPWS (Amber / PFD ADIs)	Immediately level off, initiate a climb or extend flaps, as required. (This message indicates the airplane has descended below approximately 245 feet AGL, airspeed is below 160 KIAS and flaps are not in the 35° position.)
5	"GLIDESLOPE"	GPWS (Amber / PFD ADIs ILS selected)	Maneuver the airplane to recapture the glideslope, go-around, or continue the approach - if visual - as required. (This message indicates the airplane has descended more than approximately 1.3 dots below glideslope on an ILS, is below 1000 feet AGL, and is descending greater than 500 foot per minute.)

NOTES

** If landing with flaps less than 35°, FLAP OVRD must be selected to prevent inappropriate "TOO LOW, FLAPS" warning.

ENHANCED GROUND PROXIMITY ALERTS

The following are Enhanced GPWS modes. If any of the following warnings occur, immediately initiate corrective action to eliminate the cause of the warning, as follows:

AURAL WARNING MESSAGE	VISUAL WARNING MESSAGE (Color/Display)	ACTION
"TOO LOW, TERRAIN"	GPWS (Amber / PFD ADIs)	Immediately level off, climb or continue (if visual) as required. (This message indicates the airplane has passed through the EGPWS minimum terrain clearance floor, based on proximity to nearest airport.)
"CAUTION-TERRAIN, CAUTION-TERRAIN"	GPWS (Amber / PFD ADIs)	Turn or initiate a vertical escape maneuver to avoid terrain. (This message indicates the airplane is within 30 to 60 seconds of impact with terrain which is within 250 to 500 feet below or higher than airplane altitude. This message will repeat every 7 seconds.)
"CAUTION - OBSTACLE, CAUTION - OBSTACLE"	GPWS (Amber / PFD ADIs)	Turn or initiate a vertical escape maneuver to avoid obstacles. (This message indicates the airplane is within 30 to 60 seconds of impact with terrain which is within 250 to 500 feet below or higher than airplane altitude. This message will repeat every 7 seconds.)

ADVISORY CALLOUTS (MODE 6)

Mode 6 provides the following advisory callouts. No visual alert is associated with Mode 6.

MODE	AURAL WARNING	ACTION
6	"FIVE HUNDRED"	This callout will occur on every approach at 500 ft AGL provided an ILS glideslope is not selected to the pilot's instruments, or if an ILS glideslope is selected and the aircraft is 2 dots below glideslope.
6	"MINIMUMS"	This callout will occur on every approach when the radio altitude is equal to the value for decision height entered.
6	"BANK ANGLE, BANK ANGLE"	This callout alerts the pilot to excessive bank angles. The bank angle that causes this alert varies linearly from 10° at 30 feet AGL to 40° at 150 feet AGL to 55° at 2450 feet AGL.

NORMAL PROCEDURES

COCKPIT PREPARATION

Warning Systems - CHECK/OFF.

GROUND PROXIMITY AND WINDSHEAR WARNING SYSTEM

NOTE

GPWS self-test is inhibited in flight.

1. GPWS TEST Switch/Annunciator - PRESS.

- GPWS FAIL and WSHR FAIL (AMBER message in MFD).
- Aural "GLIDESLOPE" is annunciated and boxed GND PROX appears in PFD ADI.
- Aural "PULL UP" is annunciated and Boxed Red PULL UP appears in PFD ADI.
- Aural "WINDSHEAR - WINDSHEAR - WINDSHEAR" is annunciated and Boxed Red WIND SHEAR followed by boxed amber WIND SHEAR appears in PFD ADI.
- Aural "TERRAIN - TERRAIN, PULL UP - PULL UP" is annunciated and Boxed Red PULL UP appears in PFD ADI.

(Continued on Next Page)

EGPWS MODE SELECTIONS

EGPWS modes are selected from the various bezel button menus as follows:

- **TERRAIN** - The MFD terrain map can be displayed by selecting TERR (boxed) on the MFD BEZEL menu. The terrain map can be selected/deselected by consecutive presses of this button. Terrain map cannot be selected if Terrain Inhibit is selected. This mode is indicated by green TERR displayed in the terrain box in the MFD. Terrain mode is deselected if MFD WX is selected, and visa-versa.
- **BELOW G/S CANCEL** - The BELOW GLIDESLOPE warning may be cancelled by pressing GPWS G/S (switch/annunciator).
- **GPWS FLAP OVRD** - To avoid nuisance "TOO LOW, FLAPS" warning during training or other flights during landings of flaps less than 35°, the warning may be inhibited by pressing the GPWS FLAP OVRD (switch/annunciator).
- **TERRAIN INHIBIT** - The terrain inhibit function can be enabled by selecting TERR INHIB (switch/annunciator). When terrain inhibit is selected, the 'Enhanced' GPWS warnings and the terrain map are inhibited. The basic GPWS Modes 1-6 and windshear Mode 7 will remain active. Selecting this mode will display cyan TERR INHIB in the terrain box in the MFD.

DESCRIPTION

The Enhanced Ground Proximity Warning System provides visual and aural warnings in the following Basic GPWS Modes:

1. Excessive rate-of-descent with respect to terrain (Mode 1).
2. Excessive closure rates to terrain (Mode 2).
3. Negative climb before acquiring a predetermined terrain clearance after takeoff or missed approach (Mode 3).
4. Insufficient terrain clearance based on the airplane configuration (a flap override switch is provided to disable the flap configuration input to the system to prevent nuisance warnings when landing with less than full flaps) (Mode 4).
5. Inadvertent descent below glideslope (Mode 5).
6. Minimums callout upon reading DH (Mode 6).
7. SMART 500 callout - Altitude callout at 500 AGL (Mode 6).
8. Excessive bank angle alerting (Mode 6).
9. Windshear Warning and Windshear Caution Alerts (Mode 7).

In addition, the Enhanced Ground Proximity Warning System provides the following terrain map enhance modes:

1. Terrain Clearance Floor Exceedance.
2. "Look-Ahead" Cautionary Terrain and obstacle Alerting and Warning Awareness.
3. Terrain and obstacle Awareness Display. The EGPWS provides display of proximate terrain and obstacles. The terrain display is color-and intensity-coded (by density) to provide visual indication of the relative vertical distance between the airplane and the terrain. The color bands are as shown in the following table:

RELATIVE ALTITUDE IN FEET (above or below aircraft)	DISPLAYED DOT PATTERN AND COLOR
+ 2000 and Greater	Heavy density red
+1000 to +2000	Heavy density bright yellow
-250/-500 to +1000 *	Medium density dark yellow (appears brown)
-1000 to -250-500 *	Medium intensity bright green
-2000 to -1000	Light density dark green
Caution Alert, Regardless of Altitude	Bright Solid Yellow
Warning Alert, Regardless of Altitude	Bright Solid Red

NOTE

- The yellow-green boundary will be automatically adjusted to a -250 feet value when landing gear is selected DOWN, and to -500 feet when the landing gear is selected UP.
- If there is no terrain data in the database for a particular area, then Terrain Awareness alerting is not available for that area. The affected area is colored magenta.

(Continued on Next Page)

DESCRIPTION (continued)

Aural warning priority is indicated below. IMMEDIATE PILOT ACTION IS REQUIRED WHEN ANY OF THESE MESSAGES ARE RECEIVED IN FLIGHT.

Mode 7 Windshear	"WINDSHEAR, WINDSHEAR, WINDSHEAR" one message per encounter.
Mode 1 Pull Up	"PULL UP" immediately repeated.
Mode 2 Pull Up Preface	"TERRAIN-TERRAIN" not repeated.
Mode 2 Pull Up	"PULL UP" immediately repeated.
Enhanced Terrain Awareness Preface	"TERRAIN-TERRAIN" immediately repeated.
Enhanced Terrain Awareness Warning	"PULL UP".
Obstacle Preface - Obstacle Warning	"OBSTACLE - OBSTACLE".
Mode 2 Terrain	"TERRAIN".
Mode 6 Minimums	"MINIMUMS".
Enhanced Terrain Awareness Caution	"CAUTION TERRAIN (Pause) CAUTION TERRAIN (7 Second Pause)".
Obstacle Awareness Caution	"CAUTION - OBSTACLE".
Mode 4 Too Low Terrain	"TOO LOW TERRAIN".
TCF Too Low Terrain	"TOO LOW TERRAIN".
Mode 6 Altitude	"FIVE HUNDRED" one message per approach.
Mode 4 Gear	"TOO LOW, GEAR" repeated twice, unless terrain clearance continues to decrease.
Mode 4 Flaps	"TOO LOW, FLAPS" repeated twice, unless terrain clearance continues to decrease.
Mode 1 Sinkrate	"SINKRATE - SINKRATE" one message.
Mode 3 Don't Sink	"DON'T SINK" repeated twice, unless terrain clearance continues to decrease.
Mode 5 Glideslope	"GLIDESLOPE" variable delay, more frequent and louder if condition worsens.
Mode 6 Bank Angle	"BANK ANGLE - BANK ANGLE"

NOTE

EGPWS aural alerts and warnings above will override all other aural warnings except overspeed.

PERFORMANCE

No Change.

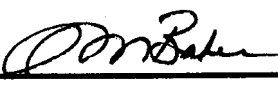

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 48

**TRIMBLE 2101 I/O GPS
(COUPLED)**

APPROVED BY 
 Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 4/21/99

SUPPLEMENT 48

TRIMBLE 2101 I/O GLOBAL POSITIONING SYSTEM (GPS) (COUPLED)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

Date

Original

21 April 1999

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S48-1 thru S48-8	Original	0	S48-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S48-AA

Airplanes equipped with Trimble 2101 I/O
Global Positioning System

TRIMBLE 2101 I/O GLOBAL POSITIONING SYSTEM

INTRODUCTION

This supplement is a part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with the Trimble 2101 I/O Global Positioning System (GPS). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The Trimble 2101 I/O GPS is approved under TSO C129 Class A1 and has been demonstrated capable of and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - When used in conjunction with Trimble FDE prediction kit, P/N 83354-00. Provided two FMS's are installed and operating and are receiving usable signals from two of the following navigation sensors (or one FMS and navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
2. North Atlantic Track (NAT) Minimum Navigational Performance Specification (MNPS) Airspace (as defined in AC91-49 and AC91-70) - Provided that the proper documentation and approval is obtained and two FMS's are installed and operating and are receiving usable signals from two (dual or combination) of the following navigation sensors:
 - a. GPS (meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
3. Enroute and Terminal including RNP5/BRNAV - In accordance with AC20-138, and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from one or more of the following:
 - a. GPS
4. Non-Precision Approach - In accordance with AC20-138 and AC20-94 provided the FMS is receiving usable navigation information from the GPS sensor.

OPERATING LIMITATIONS

GENERAL

1. The Trimble 2101 I/O GPS Navigation System Pilot Guide, Publication Number 82881, Revision E or later revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the FMS. The software status stated on the cover page of the Pilot's Guide must match that displayed on the FMS Control Display Unit (CDU).

OPERATING LIMITATIONS (Continued)

2. The Trimble 2101 position information must be checked for accuracy (reasonableness) prior to use as a means of navigation. The Trimble 2101 position should be updated when a cross-check with other approved navigation equipment reveals an error greater than 3 NM along-track or cross-track.
3. Navigation within the national airspace system shall not be predicated upon the Trimble 2101 during periods of dead reckoning (DR).
4. The internal data base (IDB) must be updated to the latest revision approximately every 28 days; updating to be accomplished with a Jeppesen database card or equivalent.
5. When latitude/longitude transferred from the IDB is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
6. GPS manually entered altitude may be used only after failure of the automatic inputs and must be updated every 5 minutes.
7. When operating outside the magnetic variation model area (north of 72 degrees 45 minutes north latitude, or south of 59 degrees 45 minutes south latitude), the pilot must manually insert magnetic variation.
8. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.
9. If not previously defined, the following default settings must be made in the "AUX" menu of the Trimble 2101 prior to operation (refer to Pilot Guide for procedure if necessary):
 - a. Set distance units to "nautical miles" and speed units to "knots".
 - b. Set altitude units to "feet".
 - c. Set map datum to WGS-84 (see note below).
 - d. Set position coordinates to LAT/LON.

NOTE

In some areas outside the United States, datums other than WGS-84 or NAD-83 may be used. If the Trimble 2101 is authorized for use by the appropriate airworthiness authority, the required geodetic datum must be set in the Trimble 2101 prior to its use for navigation.

10. The external CDI (either pilot's or copilot's EHSI) must be used as the primary source for course guidance when navigation is predicated on the use of the Trimble 2101 GPS.
11. The Trimble 2101 may not be used for navigation during single pilot operations.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

1. If Trimble 2101 GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM NOT AVAILABLE" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.

NORMAL PROCEDURES

Normal operating procedures are described in the Trimble 2101 GPS Navigator Pilot Guide, Publication Number 82881 or later appropriate revision.

NOTE

- RAIM and GPS internal annunciator lights have no function on S/W versions -241 and higher, they are identified by activating the message annunciator and accessed through the message page.
- Fuel management functions (quantity, flow, remaining, etc.) are not enabled in this installation.
- Creation of user defined waypoints through the MFD joystick designator (radar waypoints) is not enabled in this installation.
- The Trimble 2101, when coupled to the autopilot, will not automatically fly procedure turns or holding patterns and require manual intervention by the pilot. Refer to the Trimble 2101 I/O GPS Pilot Guide for proper procedures.
- If a course is manually selected to fly FROM a specified waypoint, the MFD map display will draw the course line on the opposite side of the waypoint (180 degrees from that selected). CDI indications, however, will correctly reflect the selected course.

PERFORMANCE

No Change.

DESCRIPTION

The Trimble 2101 I/O GPS Navigator is an integrated Navigation and Flight management System which consists of a control display unit (CDU) mounted on the right hand instrument panel and an externally mounted flat GPS antenna. The unit interfaces with the ARINC 429 air data computer (ADC) to supply FMS navigational data. Data is displayed on a two-line LED display contained in the CDU. The CDU also contains the mode keys, selector knobs, and annunciator lights necessary for pilot operation of the Trimble 2101.

The Trimble 2101 I/O GPS Navigator is installed as a second FMS. The unit may be coupled to the Honeywell Primus P-1000 Flight Guidance System. Course data will be presented on either EHSI when FMS2 is selected as the navigation source. Bearing pointer information for the Trimble 2101 may be displayed on the Pilot's and Copilot's EHSI by selecting FMS2 on the DC-550 Display Controller. The active flight plan map may also be displayed on the MFD.

DESCRIPTION (Continued)

SYSTEM ANNUNCIATOR/SWITCHES

Two remote annunciators are used with the Trimble 2101 GPS and are located just below each pilot's Master Warning Reset switch. The annunciator is split into four separate annunciators indicating the following:

FMS2 MSG	FMS2 WPT
FMS2 HLD	FMS2 APR

1. "FMS2 MSG" (amber annunciator) - Alerts the pilot that an advisory message is waiting. Advisory messages require the pilot's attention or action. Press the MSG key to display the message. An amber MSG is also displayed in the PFD.
2. "FMS2 WPT" (amber annunciator) - When the Trimble 2101 detects that the airplane is approaching the next programmed waypoint or turn anticipation point, the amber FMS 2 WPT annunciator will flash. Upon passing the waypoint, the annunciator will automatically extinguish. An amber WPT is also displayed in the PFD.
3. "FMS2 HLD" (green annunciator) - Alerts the pilot that the Active Flight Plan is suspended at the current Active Waypoint.
4. "FMS2 APR" (white annunciator) - Comes on at 2 nm inbound to the Final Approach Fix (FAF) when all Approach requirements are met. The requirements are: an Approach Profile is Activated, Approach mode is Enabled, Approach RAIM is predicted to be available at the FAF (from 2 nm inbound) and the missed approach point at or near the final approach course. A green APP is also displayed in the PFD.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 49

DUAL 28VDC AUXILIARY POWER SYSTEM

APPROVED BY *EW Pittman*

for

Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 6/21/99

SUPPLEMENT 49

DUAL 28VDC AUXILIARY POWER SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	21 June 1999

LOG OF EFFECTIVE PAGES

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S49-1 thru S49-6	Original	0	S49-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S49-AA

Airplanes 560-0260 and on equipped with
optional Dual 28VDC Auxiliary Power
System

DUAL 28VDC AUXILIARY POWER SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with optional Dual 28VDC Auxiliary Power System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. Both engine generators must be on-line during operation of the 28VDC Auxiliary Power System (AUX PWR 1 and/or AUX PWR 2 selected ON).
2. The flight crew is responsible at all times for observing the engine generator current load limits specified in the basic FAA Approved Airplane Flight Manual.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

NOTE

The Dual 28VDC Auxiliary Power System is designed to automatically load-shed if one or both engine generators fail in-flight. If the automatic load-shed fails to occur, AUX PWR 1 and AUX PWR 2 should be manually selected OFF. Automatic load-shed does not occur when a generator fails on the ground.

NORMAL PROCEDURES

NOTE

When operating at or near maximum generator current load limits, the flight crew should monitor generator voltage to ensure a minimum output of 28.5 volts.

(Continued Next Page)

PERFORMANCE

No Change

DESCRIPTION

The Dual 28VDC Auxiliary Power System provides power from the left and right main DC busses, through 80 amp fuse limiters, to two outlets (one each side) located in the aft cabin. Control of the system is accomplished through two annunciator/switch lights located in the center panel which are labeled AUX PWR 1 and AUX PWR 2. These annunciator/switch lights are normally illuminated when the generators are on-line. Pressing the switches causes each system to cycle between ON and OFF as indicated in the lower segment of each annunciator. In flight, the Dual 28VDC Auxiliary Power System will automatically load-shed in the event of a single or dual generator failure. If automatic load-shedding has occurred, the AUX PWR 1 and AUX PWR 2 annunciator/switch lights will not be illuminated. All segments of the annunciator/switch lights illuminate when the rotary test switch is in the ANNU position.

FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation V
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 50

**COPILOT'S STANDBY JET GYRO
(RH STANDBY GYRO)**

APPROVED BY Bennett L. Sorenson

for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 6/22/99

SUPPLEMENT 50

COPILOT'S STANDBY JET GYRO (RH STANDBY GYRO)

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

Date

Original

22 June 1999

LOG OF EFFECTIVE PAGES

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SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

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Configuration
Code

Effectivity by
Serial Number

S50-AA

Airplanes 560-0260 and on equipped with
optional Copilot's Standby Jet Gyro (RH
Standby Gyro)

COPILOT'S STANDBY JET GYRO (RH STANDBY GYRO)

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for airplanes equipped with optional Copilot's Standby Jet Gyro (RH Standby Gyro). The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures, and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

1. The RH Standby Gyro OFF flag must not be in view prior to takeoff.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

No Change.

NORMAL PROCEDURES

COCKPIT INSPECTION

After Standby Gyro - ON; Check Amber Light ON, add the following step:

- a. RH Standby Gyro - ON.

QUICK TURNAROUND

After Standby Gyro - ON/CHECK AMBER, add the following step:

- a. RH Standby Gyro - ON.

After Standby Gyro Caging Knob - UNCAGED AND NO FLAG, add the following step:

- a. RH Standby Gyro Caging Knob - UNCAGED/NO FLAG.

(Continued Next Page)

NORMAL PROCEDURES

BEFORE TAXIING

After Standby Flight Display - UNCAGED/NO FLAG, add the following step:

- a. RH Standby Gyro Caging Knob - UNCAGED/NO FLAG.

SHUTDOWN

After Flashing Beacon Light - OFF, add the following steps:

- a. RH Standby Gyro - CAGE.
- b. RH Standby Gyro - OFF.

PERFORMANCE

No Change

DESCRIPTION

The Copilot's Standby Jet Gyro (RH Standby Gyro) is a 2-inch mechanical attitude indicator installed in the copilot's instrument panel. This instrument is in addition to the existing Meggitt Standby Flight Display installed in the center instrument panel. Standby power for both instruments is supplied by a 5 amp-hour battery. The existing STDBY GYRO/OFF/TEST switch retains the standby battery test function and control of power to the Meggitt Standby Flight Display. A separate RH STBY GYRO ON/OFF switch located in the copilot's panel controls power to the RH Standby Gyro.

FAA APPROVED

Airplane Flight Manual

MODEL 560


CitationV

Ultra

SERIAL -0260 AND ON

SUPPLEMENT 52

**UNIVERSAL UNS-1K (SINGLE OR DUAL) FLIGHT
MANAGEMENT SYSTEM**

APPROVED BY 
fu Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 7/21/99

SUPPLEMENT 52

UNIVERSAL UNS-1K (SINGLE OR DUAL) FLIGHT MANAGEMENT SYSTEM

Use the Log of Effective Pages to determine the current status of this supplement. Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	21 July 1999

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
S52-1 thru S52-8	Original	0	S52-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this basic manual.

Configuration
Code

Effectivity by
Serial Number

S52-AA

Airplanes 560-0525 and On Equipped with
Optional Universal UNS-1K (Single or Dual)
Flight Management System

UNIVERSAL UNS-1K (SINGLE OR DUAL) FLIGHT MANAGEMENT SYSTEM

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for Airplanes Equipped with the Optional Universal UNS-1K (Single or Dual) Flight Management System. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATION OPERATIONAL APPROVALS

The Universal UNS-1K Flight Management System (FMS) is approved under TSO C129 A1/B1/C1 and has been demonstrated capable of, and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating, and are receiving usable signals from two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (meets the requirements of FAA Notice 8110.60 for primary navigation sensor).
 - b. Inertial Reference System (IRS).
2. North Atlantic Track (NAT) Minimum Navigational Performance Standards (MNPS) Airspace (as defined in AC91-49 and AC91-70) - Provided two FMSs are installed and operating and are receiving usable signals from any two (dual or combination) of the following navigation sensors (or one FMS and one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (meets the requirements of FAA Notice N8110.60 for primary navigation sensor).
 - b. Inertial Reference System (IRS).
3. Enroute and Terminal including RNP5/BRNAV - In accordance with AC20-130A, and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from one or more of the following:
 - a. GPS.
 - b. Inertial Reference System (IRS) (enroute only).
 - c. One VOR/DME or multiple DMEs.
4. Non-Precision Approach - In accordance with AC20-130A and AC90-94 provided the FMS is receiving usable navigation information from the GPS sensor.

OPERATING LIMITATIONS

GENERAL

1. The following UNS-1 Operator's Manuals (or later appropriate revisions) must be available to the flight crew whenever navigation is predicated on the use of the UNS-1K:

<u>Report Number</u>	<u>Change Number</u>	<u>Dated</u>	<u>Software Version</u>
2423SV603	---	January 30, 1998	603.X

2. The UNS-1K must be used in conjunction with the Universal Flight Plan (UFP) Version 11.X or later FAA approved versions, when used as the primary means of navigation in oceanic and remote airspace.

NOTE

Fault Detection and Exclusion (FDE) must be determined off-line using the UFP program on a DOS based Personal Computer. FDE cannot be computed on the FMS.

3. When latitude/longitude transferred from the internal data base (IDB) is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
4. The internal data base (IDB) must be updated to the latest revision every 28 days; updating to be accomplished with the Universal Avionics update disk or equivalent.
5. The fuel management mode is for advisory purposes only and it does not replace the airplane primary fuel flow and fuel quantity systems.
6. When operating outside the magnetic variation model area (north of 72 degrees 45 minutes north latitude, or south of 59 degrees 45 minutes south latitude), the pilot must manually insert magnetic variation.

NAVIGATION

1. Navigation within the national airspace system shall not be predicated upon the UNS-1K during periods of dead reckoning (DR).
2. Following a period of dead reckoning, position should be verified by visually sighting ground reference points and/or by using other navigation equipment such as NDB, VOR, DME, or radar fix.
3. The use of manually inserted runway coordinates is limited to VFR operations only.
4. If VNAV is to be used for an approach, VNAV may only be used enroute to within 10 nautical miles of the Final Approach Fix. When the approach mode is activated, as indicated on the FMS and CDU and by the "APP" annunciation on the PFD, VNAV may be armed for the approach.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

APPROACHES

1. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the FMS navigation data base. The FMS data base must incorporate the current update cycle.

NOTE

- Not all published approaches are in the FMS data base. The flight crew must insure that the planned approach is in the data base.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW02, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
2. When using FMS guidance for conducting instrument approach procedures that do not include 'or GPS' in the title of the published procedure, the flight crew must verify that the procedure-specified navaid and associated avionics are operational.
 3. The GPS INTEG light/annunciator must be extinguished prior to beginning the approach.
 4. Instrument approaches must be conducted with the UNS-1K in the approach mode of operation and RAIM must be available at the Final Approach Fix.
 5. The FMS approach annunciator must be illuminated (cyan APP on EHSI) prior to the Final Approach Fix.
 6. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the UNS-1K.
 7. The UNS-1K is approved for FMS VFR approaches as a VFR pilot aid only.
 8. When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 9. IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 10. When conducting missed approach procedures, autopilot coupled operation is prohibited until the flight crew has established a rate of climb that ensures all altitude requirements of the procedure will be met.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER 'MSG' ANNUNCIATOR ILLUMINATED

1. Refer to the UNS-1K Operator's Manual for the appropriate actions to respond to annunciated messages.

AMBER 'GPS INTEG' ILLUMINATED ON PFD

1. Refer to the UNS-1K Operator's Manual for the appropriate actions to respond to annunciated messages

NORMAL PROCEDURES

1. Refer to the appropriate change number of the UNS-1K Operator's Manual for FMS navigation (reference "General" Operating Limitation 1).
2. Refer to the appropriate revision of the Honeywell Primus 1000 Pilot's Manual, Pub. No. A28-1146-099-XX, for coupling the FMS to the Flight Director and /or Autopilot.
3. FMS VNAV is selected via the MFD VNAV menu bezel button. To present or activate the FMS computed data, push the MFD VNAV bezel button twice to toggle from SNGL (single point) to FMS.

NOTE

- If VNAV is not armed prior to approach path intercept, VNAV mode may not capture.
 - If VNAV has captured on the coupled flight director side, the opposite side will not be able to engage VNAV mode (it must be selected prior to capture).
4. Altitude preselect should be set to the appropriate altitude prior to reaching MDA to assure correct altitude capture on go-around.

NOTE

Remote tuning of the RMU's is only possible to the second decimal place.

PERFORMANCE

No Change.

DESCRIPTION

The Universal UNS-1K is a fully integrated navigation management system designed to provide the pilot with centralized control for the airplane's navigation sensors, computer based flight planning, and fuel management. The FMS accepts primary position information from short and long-range navigation sensors. The primary position data received from the sensors is filtered within the FMS to derive a Best Computed Position (BCP). It accomplishes these computations and advises the flight crew of components or systems requiring attention, as well as other irregularities, such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter Dead Reckoning (DR) mode and so inform the pilot through a message on the control display unit (CDU).

The UNS-1K provides lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. The FMS may be coupled to the autopilot/flight director for VNAV operation if the FMS option under the VNAV menu on the MFD bezel has been selected (Honeywell P-1000 Display and Flight Guidance System Phase IV required). The FMS computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight if the fuel and gross weight are updated prior to takeoff.

When an approach has been loaded into the active flight plan and the airplane is within 2.0 nautical miles of the Final Approach Fix, the cyan APP annunciation in the PFD will illuminate, indicating that the approach mode is engaged.


FAA APPROVED

Airplane Flight Manual

MODEL 560 Citation V *Ultra*

UNIT -0260 AND ON

SUPPLEMENT 53 SINGLE POINT FUEL DOOR MONITOR

APPROVED BY 
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE OF APPROVAL 9/24/99

SUPPLEMENT 53

SINGLE POINT FUEL DOOR MONITOR

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

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S53-1 thru S53-5/S53-6	Original	0	S53-AA

AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
S53-AA	Airplanes Equipped with Optional Single Point Fuel Door Monitor.

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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SINGLE POINT FUEL DOOR MONITOR

INTRODUCTION

This supplement is part of, and must be placed in the FAA Approved Airplane Flight Manual for airplanes equipped with the optional Single Point Fuel Door Monitor. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

No change.

OPERATING PROCEDURES

The Operating Procedures remain the same as those shown in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

SINGLE POINT FUEL DOOR OPEN (AMBER SP FUEL DOOR ANNUNCIATOR ILLUMINATED)

Indicates the single point fuel door is open.

ON GROUND

1. Correct prior to flight.

IN FLIGHT

1. Land as soon as practical.

PERFORMANCE

No change.

DESCRIPTION

The optional Single Point Fuel Door Monitor illuminates an amber SP FUEL DOOR annunciator to advise the crew that the single point fueling door is open.


FAA APPROVED
Airplane Flight Manual

MODEL 560
Citation
Ultra

SERIAL -0260 AND ON

SUPPLEMENT 54

**ALLIEDSIGNAL GNS-X_L AND GNS-X_{LS} FLIGHT
MANAGEMENT SYSTEM INSTALLATION**

APPROVED BY 
for Everett W. Pittman, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 9/24/99

24 SEPTEMBER 1999

SUPPLEMENT 54

ALLIEDSIGNAL GNS-X_L AND GNS-X_{LS} FLIGHT MANAGEMENT SYSTEM INSTALLATION

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status

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24 September 1999

LOG OF EFFECTIVE PAGES

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S54-1 thru S54-10	Original	0	S54-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this manual. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this basic manual.

Configuration
Code

Effectivity by
Serial Number

S54-AA

Airplanes 560-0535 and on equipped with both
AlliedSignal GNS-X_L and GNS-X_{LS} Flight
Management System Installation.

ALLIEDSIGNAL GNS-X_L AND GNS-X_{LS} FLIGHT MANAGEMENT SYSTEM INSTALLATION

INTRODUCTION

This supplement is part of, and must be placed in, the FAA Approved Airplane Flight Manual for airplanes equipped with an AlliedSignal GNS-X_L (P/N 18355-0101-XXXX) and an AlliedSignal GNS-X_{LS} (P/N 17960-0102-XXXX) Flight Management System Installation. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in the supplement, consult the basic FAA Approved Airplane Flight Manual.

NAVIGATIONAL OPERATIONAL APPROVALS

NOTE

The following are general navigational operational approvals for the GNS-X_L and GNS-X_{LS} Flight Management Systems. See OPERATING LIMITATIONS for limitations on specific software modification levels.

The GNS-X_L and GNS-X_{LS} Flight Management Systems (FMS) are approved under TSO C129 A1/B1/C1 and have been demonstrated capable of, and been shown to meet the requirements for the following operations:

1. Oceanic/Remote - Provided two FMSs are installed and operating, and receiving usable signals from two of the following navigation sensors (or one navigation sensor for those routes requiring only one Long Range Navigation (LRN) sensor):
 - a. GPS (GNS-X_L and GNS-X_{LS} with FDE meet the requirements of FAA Notice 8110.60 for primary navigation sensor).
2. North Atlantic (NAT) Minimum Navigation Performance Standards (MNPS) Airspace (as defined in AC91-49 and AC91-70) - Provided two FMSs are installed and operating, and are receiving usable signals from two of the following navigation sensors:
 - a. GPS (GNS-X_L and GNS-X_{LS} with FDE meet the requirements of FAA Notice 8110.60 for primary navigation sensor).
3. Enroute and Terminal (including RNP5/BRNAV) - In accordance with AC20-130A and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from one or more of the following:
 - a. VOR-DME or multiple DMEs.
 - b. GPS.
4. Non-Precision Approach - In accordance with AC20-130A and AC90-94 provided the FMS is receiving usable navigation information from the GPS sensor. The GNS-X_L and GNS-X_{LS} with FDE have been demonstrated to meet the accuracy specifications for non-precision approach operations (GPS and Overlay, Loran C, VOR, VOR-DME, TACAN, NDB, NDB-DME, and RNAV).

OPERATING LIMITATIONS

GENERAL

1. The GNS-X_L and GNS-X_{LS} Operator's Manuals (revision applicable to the installed software modification level) must be immediately available to the flight crew whenever navigation is predicated on the use of the respective FMS. The software Modification Level displayed in each FMS CDU must be from the following list:

GNS-X_L
Software
Mod Level
SM04

Applicable Operator's Manual Revision
GNS-X_L Operator's Manual, AlliedSignal Part Number
006-08852-0000, Revision 1, dated July 1998 or later
appropriate revision.

GNS-X_{LS}
Software
Mod Level
SM04

Applicable Operator's Manual Revision
GNS-X_{LS} Operator's Manual, AlliedSignal Part Number
006-08845-0000, Revision 6, dated July 1998 or later
appropriate revision.

NOTE

The Operator's Manuals are published by AlliedSignal and are generic to many airplane installations. All equipment, options and features in the Operator's Manuals may not be available on the Citation Ultra.

2. Except oceanic, The GNS-X_L and GNS-X_{LS} are not approved as the primary means of navigation. Other navigation equipment appropriate to the ground facilities along the intended route must be installed and operable, as required by the FAR's applicable to the specific type of operation (i.e. VOR, DME etc.).
3. The GNS-X_L and GNS-X_{LS}, as installed, have been found to comply with the requirements for GPS primary means of navigation in oceanic and remote airspace, including MNPS, when used in conjunction with the FDE prediction program embedded in the GNS-X_L and GNS-X_{LS}. This does not constitute operational approval.
4. IFR enroute and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
5. Navigation within the national airspace system shall not be predicated upon the GNS-X_L and GNS-X_{LS} during periods of dead reckoning (DR).
6. Instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the GPS equipment data base. The GPS equipment data base must incorporate the current update cycle.

NOTE

- Not all published approaches are in the FMS data base.
- Instrument approaches must be conducted with the GNS-X_L and/or GNS-X_{LS} in the approach mode of operation and RAIM must be available at the Final Approach Fix.

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OPERATING LIMITATIONS (Continued)

NOTE (Continued)

- GNS-X_L and/or GNS-X_{LS} APPROACH mode (green APP) must be active and annunciated in the PFD at or prior to the FAF.
 - Use of FMS guidance for conducting instrument approaches is prohibited when the ACCURACY WARN sensor message is displayed on the CDU.
 - When using FMS guidance for conducting instrument approach procedures that do not include “or GPS” in the title of the published procedure, the flight crew must verify that the procedure specified navaid and associated avionics are operational.
 - IFR non-precision approach approval is limited to published approaches within the U.S. National Airspace System. Approaches to airports in other airspace are not approved unless authorized by the appropriate governing authority.
 - Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized for the GNS-X_L and GNS-X_{LS}.
 - When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the airplane must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 - The GNS-X_L and GNS-X_{LS} can only be used for approach guidance if the reference coordinate datum system for the instrument approach is WGS-84.
 - When an instrument approach procedure missed approach point is not identified in the data base as a runway (i.e. RW19, etc.), VNAV guidance may not be appropriate for straight-in approach operations.
7. The GNS-X_L and GNS-X_{LS} are approved for FMS VFR approaches as a VFR pilot aid only. The use of manually inserted runway coordinates is limited to VFR operations only.
 8. When latitude/longitude, transferred from the navigation data base (NDB), is displayed on the CDU, the pilot will ensure that it is a reasonable position for the requested identifier.
 9. The navigation data base (NDB) must be updated to the latest revision every 28 days; updating to be accomplished with the AlliedSignal PCMCIA card. Subscribers will receive PCMCIA cards by mail.
 10. When operating outside the magnetic variation model area (North of 70 degrees North latitude or South of 60 degrees South latitude), the pilot must manually insert magnetic variation.

(Continued Next Page)

OPERATING LIMITATIONS (Continued)

11. The fuel management mode is for advisory purposes only and does not replace the airplane primary fuel flow and fuel quantity systems. Airplane performance, endurance and range must not be predicated on use of GNS-X_L and/or GNS-X_{LS} automatic TAS.
12. The airplane must be properly maintained with respect to electrical bonding and static wicks.
13. In dual FMS installations, FMS 2 use for primary navigation is prohibited during single pilot operations if FMS 2 is installed in the right (copilot's) panel.

SOFTWARE MODIFICATION LEVEL 4 (SM04)

1. The software modification level must be verified to be SM04 as displayed on the GNS-X_L and GNS-X_{LS} initialization page.
2. Manually (raw data) flown instrument approaches must be accomplished with the EHSI in FULL COMPASS mode.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

No Change.

ABNORMAL PROCEDURES

AMBER MSG ANNUNCIATOR ILLUMINATED

1. Refer to the GNS-X_L and GNS-X_{LS} Operator's Manuals for the appropriate actions to respond to annunciated messages.

AMBER INTG ANNUNCIATION IN PFD

1. If GNS-X_L and/or GNS-X_{LS} GPS navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

NOTE

- If "NO RAIM" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR approved navigation system.
- If "NO RAIM @DEST" message is displayed, the FMS has predicted that RAIM may not be available at the destination. The pilot should be prepared to use an alternate IFR approved navigation system, or select an alternate airport, if RAIM is not available upon arrival at the destination and an instrument approach is required.

(Continued Next Page)

ABNORMAL PROCEDURES (Continued)

CDU "TUNE" PAGE WITH HONEYWELL RADIO MANAGEMENT UNITS (RMUS) INSTALLED

1. A situation may occur that prevents the crew from enabling autotuning and/or selecting a NAV frequency using the FMS CDU ("TUNE"). Should this occur, manually cycle the frequency on the affected navigation radio using the Radio Management Unit (RMU). This will clear the lockup and allow the crew to tune the affected navigation radio using the FMS CDU, if desired.

NOTE

Manual tuning of NAV receiver frequencies using the RMU is not affected. Autotune selection using the panel mounted switches is not affected.

NORMAL PROCEDURES

Refer to the appropriate revision of the GNS-X_L and GNS-X_{LS} operator's manual for navigation operation (refer to Operating Limitations).

NOTE

When flying an FMS VNAV profile, the desired altitude must be set in the altitude selector and the ASEL mode must be armed to level off at the proper altitude. Adjusting the autopilot pitch wheel after the ALT mode has captured will disable the altitude hold mode.

PERFORMANCE

No Change.

DESCRIPTION

The AlliedSignal GNS-X_L and GNS-X_{LS} are a comprehensive flight management systems which utilize a GPS sensor as the primary means of computing precise position and navigational information. A VOR/DME sensor is also incorporated to provide data during degraded GPS operation or complete GPS sensor failure. The FMS advises the flight crew of components or systems requiring attention, as well as other irregularities such as loss of enough sensors to compute a valid position. In the latter situation, if sensor loss endures over a set length of time, the system will enter DR (dead reckoning) mode and will inform the pilot through a message on the control display unit (CDU).

The GNS-X_L and GNS-X_{LS} provide lateral steering information to the pilot through the flight director and primary flight display (PFD). When connected to the autopilot, it provides roll steering commands. The VNAV function provides vertical steering information via the vertical deviation needle. VNAV guidance is not provided to the flight director or autopilot. The NAV computer additionally computes fuel flow information, providing a current fuel status and airplane gross weight throughout the flight provided the fuel and gross weight are updated prior to takeoff.

(Continued Next Page)

DESCRIPTION (Continued)

The GNS-X_L and GNS-X_{LS} are not designed to fly full SID or STAR procedures. When flying those portions of a SID or STAR that are not tracks between fixes (such as heading-to-intercept type procedures), the airplane should be flown in autopilot HDG mode, or manually, to ensure proper track and turn direction.

NOTE

The MFD map display may be incorrect for the procedures described above. The pilot should refer to the published SID or STAR procedure for correct navigation guidance.

The GNS-X_L and GNS-X_{LS} are approved for non-precision approach operations when the GPS sensor is operating and the limitations presented in this supplement are complied with.

The CDI sensitivity depicted by the GNS-X_L and GNS-X_{LS} changes with respect to the mode of operation (Enroute, Terminal, and Approach). When the airplane is within 30.0 nm of the destination airport, the FMS switches from the enroute mode of operation to the terminal mode of operation. The CDI sensitivity on the PFD will change respectively from ± 5.0 nm to ± 1.0 nm for full scale deflection. When an approach has been loaded into the active flight plan and the airplane is within 2.0 nm of the final approach fix (FAF), the "GNS-X Approach" panel annunciator and the cyan "APP" annunciation in the PFD will illuminate, indicating that the approach mode is engaged. CDI scaling sensitivity will change respectively from ± 1.0 nm to ± 0.3 nm for full scale deflection.

NOTE

With SM04 (Software Modification Level 4), and when a holding pattern or procedure turn is initiated, the course arrow and CDI needle refer to the current or next desired track.

Automatic leg sequencing will cease at the MAP. Missed approach procedures are to be executed as published. After executing the missed approach procedure and en route to the missed approach holding fix, the fix can be automatically selected as the next waypoint by pressing the DIRECT to button.

NOTE

When initially executing a missed approach procedure, use the autopilot HDG mode or manually fly the procedure to ensure proper track and turn direction.

FAA APPROVED

Airplane Flight Manual

MODEL 560

Citation V

Ultra

UNIT -0260 THRU -0538

SUPPLEMENT 65

ALLIEDSIGNAL AEROSPACE CAS 67A TCAS II

CHANGE 7.0 AND ACAS II

APPROVED BY Kevin D Campbell

for Manager,
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 5/23/01

SUPPLEMENT 65

ALLIEDSIGNAL AEROSPACE CAS 67A TCAS II CHANGE 7.0 AND ACAS II

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	23 May 2001

LOG OF EFFECTIVE PAGES

Page	Page Status	Revision Number	Configuration Code
S65-1 thru S65-12	Original	0	S65-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of the page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. If no configuration code appears on page, the page is for all configurations. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
S65-AA	Airplanes Equipped with Optional AlliedSignal CAS 67A Traffic Alert and Collision Avoidance System (TCAS) II with 7.0 Enhanced Software and Airborne Collision Avoidance System (ACAS) II or later revisions.

ALLIEDSIGNAL AEROSPACE CAS 67A TCAS II CHANGE 7.0 AND ACAS II

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Equipped with Optional AlliedSignal CAS 67A Traffic Alert and Collision Avoidance System (TCAS) II and Airborne Collision Avoidance System (ACAS) II. ACAS II is the European acronym for TCAS II with change 7.0. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual. This supplement complies with JAA leaflet No. 8 guidelines. For simplicity, the term TCAS/ACAS will be used to refer to TCAS II/ACAS II in this supplement.

OPERATING LIMITATIONS

1. The AlliedSignal CAS 67A ACAS II Pilot's Manual, Publication No. 006-18201-0000, Revision 0 dated April 1999, or appropriate later revision, must be readily available to the flight crew when operating the CAS 67A TCAS II/ACAS II unit.
2. Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with a TCAS/ACAS resolution advisory.
3. If ATC requires that the transponder altitude reporting be disabled, TCAS/ACAS must be turned off.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

EMERGENCY PROCEDURES

ENGINE FAILURE/PRECAUTIONARY SHUTDOWN

After the step "If no fire, Firewall Shutoff - LEAVE OPEN and FUEL BOOST Pump (affected engine) - ON.

NOTE

- If no fire hazard or engine damage exists, leave firewall shutoff OPEN, turn fuel boost pump ON to prevent damage to engine-driven fuel pump.
- If engine windmills with firewall shutoff CLOSED or with no indication of oil pressure, after landing refer to Engine Maintenance Manual for required inspections."

Add the following:

_.) TCAS/ACAS - TA only mode on the TCAS/Mode S control panel.

NOTE

RAs are predicated on all engines operating. RA climb performance may not be achievable during engine-out operation.

ENGINE FIRE (LH OR RH ENGINE FIRE WARNING LIGHT/SWITCH ILLUMINATED)

After all occurrences of the steps "Land as soon as practical" or "Land as soon as possible", add the following:

_.) TCAS/ACAS - TA only mode on the TCAS/Mode S control panel.

NOTE

RAs are predicated on all engines operating. RA climb performance may not be achievable during engine-out operation.

ABNORMAL PROCEDURES

TCAS FAILURE (AMBER TCAS FAIL ANNUNCIATION ON MFD/PFD)

1. TCAS Circuit Breaker - CHECK IN.
2. Attitude (VG2), Heading (DG2) and Radio Altitude (RAD ALT) Circuit Breakers - CHECK IN.

IF "TCAS FAIL" ANNUNCIATOR REMAINS ON

3. Altitude Encoder Source - SELECT OTHER SOURCE.
4. Transponder - OPERATE NORMALLY.

NOTE

Failure of peripheral inputs, i.e. gyroscopes or radio altitude, will result in "TCAS FAIL" message.

SYMBOL GENERATOR 1 FAILURE OR RMU 1 FAILURE (PRIMUS II RADIO INSTALLATIONS ONLY)

1. MFD Controller Mode Select Knob - SELECT SG2.
2. PFD display - VERIFY amber SG2 annunciated in both PFDs.
3. TCAS DSPY 1/2 Window in RMUs - DISABLE in RMU 1 and ENABLE in RMU 2 (Refer to Primus II radio description in this supplement).

NORMAL PROCEDURES

1. Refer to the appropriate AlliedSignal CAS 67A TCAS/ACAS Pilot's Manual described in the Operating Limitations section.
2. TCAS/ACAS Operating Constraints:
 - a. INCREASE DESCENT RAs are inhibited below 1450 feet AGL.
 - b. All RAs are inhibited and TCAS/ACAS will go into the TA only mode when the airplane is below 900 feet AGL during descent and below 1100 feet AGL during climb.
 - c. All aural alerts will also be inhibited below 400 feet AGL on approach and up to 600 feet AGL on departure.
 - d. Airplanes on the ground are not displayed by TCAS/ACAS.
 - e. If intruder track or altitude information is lost during an RA occurrence, the RA will terminate without a "CLEAR OF CONFLICT" annunciation.
 - f. TCAS/ACAS RA algorithms are based on the pilot starting the initial maneuver within 5 seconds, and within two and a half (2 1/2) seconds if an additional corrective RA (increase or reverse) is issued.
3. Preflight Test - Activate the self test mode per the procedures specified for the type of transponder control installed in the airplane. The aural annunciation "TCAS SYSTEM TEST OK" advises the minimum required equipment is available and operational. "TCAS SYSTEM TEST FAIL" is announced if the minimum required equipment complement is not available.

NOTE

The self-test will affect normal TCAS/ACAS operation for up to twelve seconds, if initiated in flight.

4. Ground Operation

BEFORE TAKEOFF

- a. The TCAS/ACAS should not be selected to "TA" or "TA/RA" until just prior to takeoff.
- b. The TCAS/ACAS display selector should be set to AUTO SEL.

AFTER LANDING

- a. The TCAS/ACAS should be selected to STBY immediately after clearing runway.

5. TCAS/ACAS Flight Procedures

- a. TCAS Traffic Advisory

Using the information on the MFD TCAS/ACAS display, commence a visual search for the intruder. If and only if, the intruder is visually acquired, maneuver the airplane to maintain safe separation.

NOTE

- Evasive maneuvers based solely on TCAS/ACAS traffic advisories, without visual acquisition of intruder are not recommended.
- If the TCAS/ACAS aural advisory of "TRAFFIC TRAFFIC" occurs, an intruder airplane is within approximately 40 seconds of the closest point of approach to your airplane.

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NORMAL PROCEDURES (Continued)

b. TCAS/ACAS Resolution Advisory

WARNING

- **ONCE AN RA HAS BEEN ISSUED, SAFE SEPARATION COULD BE COMPROMISED IF CURRENT VERTICAL SPEED IS CHANGED, EXCEPT AS NECESSARY TO COMPLY WITH THE RA. THIS IS BECAUSE TCAS/ACAS TO TCAS/ACAS COORDINATION MAY BE IN PROGRESS WITH THE INTRUDER AIRPLANE, AND ANY CHANGE IN VERTICAL SPEED THAT DOES NOT COMPLY WITH THE RA MAY NEGATE THE EFFECTIVENESS OF THE OTHER AIRPLANE'S COMPLIANCE WITH THE RA.**
- **IT IS POSSIBLE IN SOME CASES TO HAVE INSUFFICIENT AIRPLANE PERFORMANCE TO FOLLOW THE TCAS/ACAS COMMAND WITHOUT FLYING INTO STALL WARNING OR BUFFET. CONDITIONS WHERE THIS MAY OCCUR INCLUDE:**
 1. **BANK ANGLE IN EXCESS OF 15 DEGREES.**
 2. **OPERATION AT AIRPORTS ABOVE 5300 FEET MSL OR TEMPERATURES GREATER THAN ISA + 50°F.**
 3. **ENGINE INOPERATIVE.**
 4. **FAILURE TO CONFIGURE THE AIRPLANE TO GO-AROUND FOLLOWING A CLIMB RA IN LANDING CONFIGURATION.**
 5. **FAILURE TO ADVANCE THRUST TO FULL RATING FOLLOWING REDUCED THRUST TAKEOFF.**
 6. **SPEEDS LESS THAN NORMAL OPERATING SPEED.**
 7. **ABNORMAL CONFIGURATIONS WHICH REDUCE PERFORMANCE (I.E. GEAR NOT RETRACTABLE).**
 8. **TCAS/ACAS COMMAND REVERSAL TO A "CLIMB - CLIMB NOW".**
 9. **BUFFET MARGIN LESS THAN .3G.**

NOTE

- The consequences of not following an RA may result in additional RAs in which aural alert and visual annunciations may not agree with each other.
- Using every available means, clear the airspace into which you are going to maneuver. If needed, promptly and smoothly adjust your airplane's vertical rate so as to keep the VSI needle just outside the red area on the VSI. This should require no more than 0.75g to 1.25g maneuver ($\pm 0.25g$).
- If high speed buffet is encountered when initially responding to an RA, relax pitch force as necessary to reduce buffet, but still continue to maneuver.
- If stall warning occurs during an RA maneuver, immediately abandon the RA and execute stall recovery procedures. TCAS/ACAS will continue to provide RAs during stall warning and recovery procedure.
- Exaggerated responses to TCAS/ACAS RAs are not desirable or appropriate because of the other potential traffic conflicts and ATC consequences. From level flight, proper response to TCAS/ACAS RA typically results in an overall altitude deviation of 300 to 500 feet in order to successfully resolve a traffic conflict.

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NORMAL PROCEDURES (Continued)**NOTE** (Continued)

- If a CLIMB RA is issued with the airplane in the landing configuration, a normal go-around should be initiated including the appropriate thrust increase and configuration change.
 - Flight director pitch commands should not be followed unless they result in a vertical speed which satisfies the RA command.
 - The pilot should not initiate evasive maneuvers using information from the traffic display only or on a Traffic Advisory only, without visually acquiring the traffic.
 - Compliance with TCAS/ACAS resolution advisories is required unless the pilot considers it unsafe to do so.
 - The pilot should promptly return to the previous ATC clearance after the TCAS/ACAS voice message "Clear of Conflict" is announced.
 - An immediate, smooth response to an RA is required to obtain maximum separation. While TCAS/ACAS algorithms are based upon the pilot initiating the initial maneuver within five (5) seconds of the RA, and within two and a half (2 1/2) seconds for additional corrective RAs (increases or reversals), any delay in responding to RAs will reduce the separation provided.
6. TCAS/ACAS range selection:
- a. A 10 NM (or lower) range may be selected for takeoff, low altitude climb, approach and landing, and below 10,000 feet.
 - b. A 10 NM (or greater) range may be selected for high altitude cruise.
 - c. The range selected has no effect on the TCAS/ACAS logic giving TAs and RAs.

NOTE

If the TCAS/ACAS traffic map display is removed from the MFD, it should be selected (either manually or automatically) to a usable range. A range of 5 or 10 NM is recommended.

7. TA only mode:
- a. The TA position on the control panel gives TA only mode and should only be used to preclude unnecessary RAs when operating near closely spaced parallel runways.
 - b. All resolution advisories (RAs) are inhibited when TA only mode is selected.
 - c. The TA only mode should be selected following an in-flight engine shutdown.
8. TCAS/ACAS traffic advisory annunciations (TA):

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW ACTION</u>
"TRAFFIC, TRAFFIC"	Amber filled circle on the MFD TCAS/ACAS display.	Conduct visual search for the intruder. If successful, maintain visual acquisition to ensure safe operation.

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NORMAL PROCEDURES (Continued)

9. TCAS/ACAS resolution advisory annunciations (RA)

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW ACTION</u>
"CLIMB, CLIMB"	VSI RED from -6000 FPM to +1500 FPM and GREEN from +1500 FPM to +2000 FPM.	Promptly, and smoothly, establish a 1500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"CLIMB, CLIMB NOW, CLIMB, CLIMB NOW"	Follows a "DESCEND" advisory when it has been determined that a reversal of vertical speed (direction) is needed to provide adequate vertical separation.	Promptly, and smoothly, establish a 1500 FPM or greater CLIMB as indicated by the GREEN arc on the VSI display.
"DESCEND, DESCEND"	VSI RED from +6000 FPM to -1500 FPM and GREEN from -1500 FPM to -2000 FPM.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"DESCEND, DESCEND NOW, DESCEND, DESCEND NOW"	Follows a "CLIMB" advisory when it has been determined that a reversal of vertical speed (direction) is needed to provide adequate vertical separation.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"INCREASE DESCENT, INCREASE DESCENT"	Follows a "DESCEND" advisory. VSI RED from +6000 FPM to -2500 and GREEN from -2500 FPM to -3500 FPM. Indicates the vertical speed MUST BE INCREASED to ensure adequate separation.	Promptly, and smoothly, establish a 2500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"DESCEND CROSSING DESCEND, DESCEND CROSSING DESCEND"	Same as "DESCEND" and further indicates that own flight path will cross that of the intruder.	Promptly, and smoothly, establish a 1500 FPM or greater DESCENT as indicated by the GREEN arc on the VSI display.
"INCREASE CLIMB, INCREASE CLIMB"	Follows a "CLIMB" advisory. VSI RED from -6000 FPM to +2500 FPM and GREEN from +2500 FPM to +3500 FPM. Indicates the vertical speed MUST BE INCREASED to ensure adequate separation.	Promptly and smoothly establish a 2500 FPM CLIMB as indicated by the GREEN arc on the VSI display.

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NORMAL PROCEDURES (Continued)

<u>AURAL</u>	<u>VISUAL</u>	<u>CREW ACTION</u>
"ADJUST VERTICAL SPEED, ADJUST"	VSI indicates prohibited vertical speed in RED. GOAL is vertical speed GREEN.	Promptly, and smoothly, reduce vertical speed to that shown by the GREEN arc as indicated on the VSI.
"CLIMB, CROSSING CLIMB, CLIMB, CROSSING CLIMB"	Same as "CLIMB" and further indicates that own flight path will cross that of intruder.	Promptly, and smoothly, establish a 1500 FPM CLIMB as indicated by the GREEN arc on the VSI display.
"MONITOR VERTICAL SPEED, MONITOR VERTICAL SPEED"	Present vertical speed is outside the RED arc as shown on the VSI.	Keep vertical speed out of the RED, unsafe area as indicated on the VSI.
"MAINTAIN VERTICAL SPEED, MAINTAIN"	VSI indicates prohibited vertical speed in RED. Goal is vertical speed in GREEN.	Maintain vertical speed to that indicated by the GREEN arc on the VSI.
"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"	Same as "Maintain Vertical Speed, Maintain" and further indicates that own flight path will cross that of intruder.	Maintain vertical speed to that indicated by the GREEN arc on VSI.
"CLEAR OF CONFLICT"	VSI RED and GREEN arcs removed. Range is increasing, and is adequate.	Promptly, and smoothly, return to assigned altitude.

PERFORMANCE

No Change.

DESCRIPTION

The traffic alert and collision avoidance system is an independent airborne system. It is designed to act as a back-up to the Air Traffic Control system and the "see and avoid" concept. ACAS is the European acronym for TCAS with Change 7.0 incorporated. TCAS consists of six airplane-mounted antennas, a TCAS computer unit and dual Mode S transponders; displays and controls are located in the cockpit. The following options are operational:

- The TCAS/ACAS is wired to display all traffic on the MFD display.
- The TCAS/ACAS display range is pilot selectable.
- The TCAS/ACAS system will automatically be in "TA ONLY" and not in STBY when on the ground (and the TCAS/ACAS system is active). Pilot selectable self-test is not inhibited in flight.
- A test pattern is displayed on the PFD/MFD during the pilot initiated TCAS/ACAS self-test.

For further information, refer to the appropriate AlliedSignal CAS 67A Pilot's Manual described in the Operating Limitations section.

(Continued Next Page)

DESCRIPTION (Continued)

NOTE

TCAS/ACAS cannot provide an alert for traffic conflicts with airplanes without operating transponders.

If an installation includes a windshear warning system and/or a ground proximity warning system, in conjunction with TCAS/ACAS system, the aural warning priority is as follows:

1. Windshear Warning
2. Ground Proximity Warning
3. TCAS/ACAS Warning

AIRPLANES EQUIPPED WITH HONEYWELL PRIMUS II RADIOS

Control of transponder and TCAS/ACAS operating modes is accomplished through a common ATC/TCAS window within each RMU. Either RMU may be used to select operating mode and set squawk code, with the opposite RMU slaving to the last control input.

TCAS/ACAS generates a traffic map display of nearby airplanes that may be displayed on the MFD. This display may be added to the MFD manually by the TCAS button on the MC-800 MFD display controller or it may be selected to auto-pop-up. The auto-pop-up feature is enabled/disabled by selecting AUTO/MAN as desired on the RMU ATC/TCAS page. The TCAS/ACAS display will remain in view for the duration of the (TA or RA) event, plus 10 seconds. The TCAS/ACAS display may be brought up manually at any time by pressing the TCAS button on the MC-800 display controller.

AIRPLANES EQUIPPED WITH OPTIONAL COLLINS RADIOS

TCAS/ACAS generates a traffic map display of nearby airplanes that may be displayed on the MFD. This display may be added to the MFD manually by the TCAS button on the MC-800 MFD display controller or it may be selected to auto-pop-up. Control of this feature is selected by the TCAS display control button shown in Figure S65-1.



Figure S65-1

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- a. TCAS DSP AUTO SEL - In this mode, the TCAS/ACAS traffic map display will auto-pop-up anytime a TA or RA event occurs. The map will remain in view for the duration of the event, plus 10 seconds. The traffic map display may still be brought up manually at any time by pressing the TCAS button on the MC-800 display controller.
- b. TCAS DSP MAN SEL - In this mode, the TCAS/ACAS traffic map must be brought up manually by the TCAS button on the MC-800 display controller. The auto-pop-up feature is disabled. All TA or RA events will continue to be aurally enunciated.

FAA APPROVED
Airplane Flight Manual
MODEL 560
Citation V
Ultra

SERIAL 560-0260 THRU -0538

SUPPLEMENT 66

**AUSTRIAN REGISTERED AIRPLANES CERTIFIED
FOR STEEP APPROACHES AND SHORT FIELD
LANDING OPERATIONS**

This Airplane Flight Manual Supplement is approved by the U.S. Federal Aviation Administration (FAA) on behalf of the Austrian Civil Aviation Administration

APPROVED BY Kevin D Campbell
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DATE OF APPROVAL 4/18/02

SUPPLEMENT 66

AUSTRIAN REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS

Use the Log of Effective Pages to determine the current status of this supplement.

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S66-1 thru S66-15/S66-16	Original	0	S66-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicate page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

Configuration
Code

Effectivity by
Serial Number

S66-AA

Austrian Registered Airplanes Certified for
Steep Approaches and Short Field Operations

AUSTRIAN REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Austrian Registered Airplanes Certified for Steep Approaches and Short Field Operations. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The nose wheel steering, antiskid system, speed brakes, and thrust reversers must be operative.

LANDING GEAR LIFE LIMITS:

Each full stop landing shall be multiplied by a factor of 1.33 for calculating replacement life of all components.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS:

- a. Maximum Landing Weight - 12,000 lbs.

LANDING OPERATIONAL LIMITS:

- a. Airspeed - $V_{REF} + 5$ KIAS.
- b. Deliberate Single Engine Approaches are not approved.
- c. Minimum visual guidance intercept is 1,000 ft.
- d. Minimum ILS guidance intercept is 1,800 ft.
- e. Maximum Altitude Limit is 5,000 ft.
- f. Tailwind landings prohibited.

KINDS OF OPERATIONS:

- a. The airplane is approved for manually flown steep approaches in visual or instrument meteorological conditions, with no icing conditions, using an approved visual or ILS glide path reference system.
- b. This supplement does not constitute operational approval to conduct steep approach and short field landing operations.

PERFORMANCE LIMITATIONS:

- a. The data in this supplement are predicated on the use of an approach path angle of 5.5 degrees, and a screen height of 35 feet.
- b. The airplane must be in the "Both Engines Operating" configuration.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

CAUTION

MINIMUM ALTITUDE FOR INITIATING A GO-AROUND IS 40 FEET ABOVE THE AIRFIELD APPROACH MINIMUM.

EMERGENCY PROCEDURES

No Change

ABNORMAL PROCEDURES

ENGINE FAILURE DURING APPROACH

1. Throttle (Operating Engine) - T.O. Power.
2. Airplane Pitch Attitude - 10 degrees (Go-around mode on flight director for reference).
3. Flaps - T.O. & APPR.

NOTE

The landing gear warning horn cannot be silenced if the landing gear is retracted prior to the flaps reaching T.O. & APPR position.

4. Speed Brakes - CONFIRM RETRACTED.
5. Climb Speed - $V_{REF} + 10$ KIAS minimum.
6. Landing Gear - UP (When positive rate-of-climb is established).
7. Flaps - RETRACT at 400 feet or above.
8. Climb Speed - V_{ENR} .
9. Thrust - Maximum Continuous Power.

NORMAL PROCEDURES

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF)

1. Seats, seat belts, and shoulder harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. $V_{REF} + 5$ KIAS and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD, and POSITIONED AFT or FORWARD to clear exit doors.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

BEFORE LANDING (To be completed not later than 2 NM. before the FAP/FAF) (Continued)

7. Flaps - T.O. and APPROACH.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM.
10. Fuel Crossfeed - OFF.
11. Ignition - ON.
12. Landing Gear - DOWN and LOCKED.
13. Antiskid - CHECK ON.
14. Speed Brakes - EXTEND.
15. Flaps - LAND.
16. Landing Lights - As Required.
17. Airspeed - $V_{REF} + 5$ KIAS.
18. Autopilot & Yaw Damper - OFF.
19. Annunciator Panel - CLEAR (except for speed brake).
20. Pressurization - CHECK ZERO DIFFERENTIAL.

NOTE

On intercepting the glide slope, reduce power to idle to initiate descent and then modulate as necessary to maintain glide slope and $V_{REF} + 5$ KIAS approach speed. Descent rate of 750 to 1100 feet/minute (5.5° approach angle).

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

LANDING (Continued)

2. Brakes - APPLY (after touchdown).

CAUTION

IF DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the anti-skid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

3. Thrust Reversers - DEPLOY (after nose wheel on ground).

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY.

NOTE

To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nosewheel is on the ground.

4. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
5. Reverser Power - MAX REVERSE (do not exceed 76.6% fan speed when OAT is below -18°C or 80.1% fan speed at or above -18°C OAT).
6. Thrust Reversers - REVERSER LEVERS TO IDLE REVERSE AT 60 KIAS.

PROCEDURES FOR USE OF STEEP APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. The maximum landing weight for all conditions presented in this supplement is 12,000 pounds. If this limitation restricts the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing field length, V_{APP} and $V_{REF} +5$ KIAS, from Figure S66-1, then apply the appropriate factors from the note below. If the available runway length is less than the landing field length required, the airplane landing weight must be reduced.

NOTE

- To obtain performance data for values not listed on the table, use the next higher increment for weight, altitude and temperature.
 - Multiply the landing field length by 1.15 for -1 percent (downhill) runway gradient; by 1.45 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing field length obtained from Figure S66-1.
 - The actual landing distances were multiplied by 1.82 (as allowed with the thrust reversers) to determine the required landing field lengths presented in Figure S66-1.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables (Figures 4-38 and 4-39) are for advisory information only.

LANDING FIELD LENGTH - FEET

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3530	3270	3020	2790
-20	3570	3310	3060	2820
-15	3610	3350	3100	2860
-10	3650	3390	3130	2900
-5	3690	3430	3170	2930
0	3740	3470	3210	2970
5	3780	3510	3250	3010
10	3820	3550	3290	3050
15	3860	3580	3320	3080
20	3890	3620	3360	3110
25	3930	3660	3400	3150
30	3970	3690	3430	3180
35	4000	3730	3460	3220
40	4040	3770	3500	3250
45	4090	3800	3540	3290
50	4130	3850	3580	3330
54	4170	3880	3620	3360

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3420	3160	2920	2700
-20	3450	3200	2950	2730
-15	3490	3230	2990	2760
-10	3530	3270	3020	2790
-5	3560	3310	3060	2830
0	3600	3340	3100	2860
5	3640	3380	3130	2900
10	3680	3420	3170	2930
15	3710	3450	3200	2960
20	3750	3480	3230	3000
25	3780	3520	3270	3030
30	3820	3550	3300	3060
35	3850	3580	3330	3090
40	3890	3620	3360	3120
45	3920	3650	3400	3160
50	3960	3690	3440	3190
54	4000	3730	3470	3230

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3300	3050	2820	2620
-20	3330	3080	2850	2640
-15	3370	3120	2880	2670
-10	3400	3150	2910	2700
-5	3440	3180	2950	2730
0	3470	3220	2980	2760
5	3510	3250	3020	2790
10	3540	3290	3050	2820
15	3570	3320	3080	2850
20	3600	3350	3110	2880
25	3630	3380	3140	2910
30	3670	3410	3170	2930
35	3700	3440	3200	2960
40	3730	3470	3230	2990
45	3760	3510	3260	3030
50	3800	3540	3290	3060
54	3830	3570	3330	3090

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3190	2950	2740	2530
-20	3220	2970	2760	2560
-15	3250	3000	2790	2580
-10	3280	3030	2820	2610
-5	3310	3070	2840	2640
0	3340	3100	2870	2670
5	3380	3130	2900	2690
10	3410	3160	2930	2720
15	3430	3190	2960	2740
20	3460	3220	2980	2770
25	3490	3250	3010	2790
30	3520	3270	3040	2820
35	3550	3300	3060	2840
40	3580	3330	3090	2870
45	3610	3360	3120	2900
50	3640	3390	3150	2930
54	3670	3420	3180	2960

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3080	2860	2650	2450
-20	3100	2890	2680	2470
-15	3130	2910	2700	2500
-10	3160	2930	2730	2520
-5	3190	2960	2750	2550
0	3220	2990	2780	2580
5	3250	3010	2800	2600
10	3270	3040	2830	2620
15	3300	3060	2850	2650
20	3330	3090	2870	2670
25	3350	3110	2890	2690
30	3380	3140	2910	2710
35	3400	3160	2940	2730
40	3430	3190	2960	2760
45	3460	3220	2990	2780
50	3490	3250	3020	2810
54	3520	3280	3050	2830

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2990	2780	2570	2370
-20	3010	2800	2590	2390
-15	3030	2820	2610	2410
-10	3050	2840	2630	2430
-5	3080	2860	2660	2460
0	3100	2890	2680	2480
5	3120	2910	2710	2510
10	3150	2930	2730	2530
15	3170	2950	2750	2550
20	3190	2970	2770	2570
25	3220	2990	2790	2590
30	3240	3010	2810	2610
35	3260	3030	2830	2630
40	3280	3050	2850	2650
45	3310	3080	2870	2670
50	3340	3110	2900	2700
54	3360	3130	2920	2720

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S66-1 (Sheet 1 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
1000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3630	3370	3110	2870
-20	3680	3410	3150	2910
-15	3720	3450	3190	2950
-10	3760	3490	3230	2990
-5	3810	3530	3270	3030
0	3850	3580	3320	3070
5	3890	3620	3360	3110
10	3940	3660	3400	3150
15	3980	3700	3430	3180
20	4020	3740	3470	3220
25	4060	3780	3510	3260
30	4100	3810	3550	3290
35	4140	3850	3580	3330
40	4180	3890	3620	3370
45	4220	3930	3660	3400
50	4270	3980	3700	3440
52	4290	4000	3730	3460

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3510	3250	3010	2770
-20	3550	3290	3040	2810
-15	3590	3330	3080	2840
-10	3630	3370	3120	2880
-5	3670	3410	3160	2920
0	3710	3450	3190	2960
5	3750	3490	3230	2990
10	3790	3520	3270	3030
15	3830	3560	3300	3060
20	3860	3590	3340	3100
25	3900	3630	3370	3130
30	3940	3670	3410	3160
35	3970	3700	3440	3200
40	4010	3740	3480	3230
45	4050	3780	3510	3270
50	4090	3820	3550	3300
52	4120	3840	3570	3320

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3390	3140	2900	2690
-20	3420	3170	2930	2720
-15	3460	3210	2970	2750
-10	3500	3240	3000	2780
-5	3530	3280	3040	2810
0	3570	3320	3070	2840
5	3610	3350	3110	2880
10	3650	3390	3140	2910
15	3680	3420	3170	2940
20	3710	3450	3210	2970
25	3750	3480	3240	3000
30	3780	3520	3270	3030
35	3810	3550	3300	3060
40	3850	3580	3330	3100
45	3880	3620	3370	3130
50	3920	3660	3400	3160
52	3940	3680	3420	3180

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3270	3030	2810	2600
-20	3300	3060	2840	2630
-15	3330	3090	2860	2660
-10	3370	3120	2890	2680
-5	3400	3160	2920	2710
0	3440	3190	2950	2740
5	3470	3220	2990	2770
10	3500	3260	3020	2800
15	3540	3290	3050	2830
20	3570	3320	3080	2850
25	3600	3340	3110	2880
30	3630	3370	3130	2910
35	3660	3400	3160	2930
40	3690	3430	3190	2960
45	3720	3470	3220	2990
50	3760	3500	3260	3030
52	3770	3520	3280	3040

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3150	2930	2720	2520
-20	3180	2960	2750	2540
-15	3210	2980	2770	2570
-10	3240	3010	2800	2590
-5	3280	3040	2830	2620
0	3310	3070	2850	2650
5	3340	3100	2880	2680
10	3370	3130	2900	2700
15	3400	3150	2930	2720
20	3420	3180	2950	2750
25	3450	3210	2980	2770
30	3480	3230	3000	2790
35	3500	3260	3030	2820
40	3530	3290	3060	2840
45	3560	3320	3080	2870
50	3600	3350	3120	2890
52	3610	3370	3130	2910

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3060	2840	2640	2430
-20	3080	2870	2660	2450
-15	3100	2890	2680	2480
-10	3130	2910	2700	2500
-5	3150	2940	2730	2530
0	3180	2960	2760	2550
5	3210	2990	2780	2580
10	3230	3010	2800	2600
15	3260	3030	2830	2620
20	3280	3050	2850	2640
25	3310	3070	2870	2670
30	3330	3100	2890	2690
35	3360	3120	2910	2710
40	3380	3150	2930	2730
45	3410	3170	2950	2750
50	3440	3200	2980	2780
52	3450	3220	2990	2790

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S66-1 (Sheet 2 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
2000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3740	3470	3210	2970
-20	3780	3510	3250	3010
-15	3830	3550	3290	3050
-10	3880	3600	3340	3090
-5	3920	3640	3380	3130
0	3970	3690	3420	3170
5	4020	3730	3470	3210
10	4060	3780	3510	3250
15	4110	3820	3550	3290
20	4150	3860	3590	3330
25	4190	3900	3630	3370
30	4230	3940	3670	3410
35	4270	3980	3710	3450
40	4320	4030	3750	3490
45	4360	4070	3790	3520
50	4410	4120	3830	3570

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3610	3350	3100	2860
-20	3650	3390	3140	2900
-15	3690	3430	3170	2940
-10	3740	3470	3210	2970
-5	3780	3510	3260	3010
0	3820	3550	3300	3050
5	3870	3600	3340	3090
10	3910	3640	3380	3130
15	3950	3670	3410	3170
20	3990	3710	3450	3200
25	4030	3750	3490	3240
30	4060	3790	3520	3270
35	4100	3820	3560	3310
40	4140	3860	3600	3340
45	4180	3900	3630	3380
50	4230	3950	3680	3420

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3480	3230	2990	2760
-20	3520	3260	3020	2790
-15	3560	3300	3060	2830
-10	3600	3340	3090	2860
-5	3640	3380	3130	2900
0	3680	3420	3170	2930
5	3720	3460	3210	2970
10	3760	3490	3240	3010
15	3790	3530	3280	3040
20	3830	3560	3310	3070
25	3860	3600	3340	3100
30	3900	3630	3380	3140
35	3930	3670	3410	3170
40	3970	3700	3450	3200
45	4010	3740	3480	3240
50	4050	3780	3520	3270

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3360	3110	2880	2680
-20	3390	3140	2910	2700
-15	3430	3180	2940	2730
-10	3460	3210	2970	2760
-5	3500	3250	3010	2790
0	3540	3290	3040	2820
5	3570	3320	3080	2850
10	3610	3360	3110	2880
15	3640	3390	3140	2910
20	3670	3420	3180	2940
25	3710	3450	3210	2970
30	3740	3480	3240	3000
35	3770	3510	3270	3030
40	3800	3540	3300	3060
45	3840	3580	3330	3100
50	3880	3620	3370	3130

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3240	3000	2790	2590
-20	3270	3030	2820	2610
-15	3300	3060	2850	2640
-10	3330	3090	2870	2670
-5	3370	3120	2900	2700
0	3400	3160	2930	2730
5	3430	3190	2960	2750
10	3470	3220	2990	2780
15	3500	3250	3020	2810
20	3520	3280	3040	2830
25	3550	3310	3070	2850
30	3580	3330	3100	2880
35	3610	3360	3130	2900
40	3640	3390	3160	2930
45	3670	3420	3180	2960
50	3710	3460	3220	2990

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3130	2910	2700	2500
-20	3150	2940	2730	2520
-15	3180	2960	2750	2550
-10	3200	2990	2780	2570
-5	3240	3010	2800	2600
0	3270	3040	2830	2630
5	3300	3070	2860	2650
10	3330	3090	2880	2680
15	3350	3110	2900	2700
20	3380	3140	2930	2720
25	3400	3170	2950	2750
30	3430	3190	2970	2770
35	3460	3220	2990	2790
40	3480	3240	3020	2810
45	3510	3270	3040	2840
50	3540	3300	3070	2870

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S66-1 (Sheet 3 of 6)

LANDING FIELD LENGTH - FEET

**FLAPS - FULL
3000 FEET**

**CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET**

**ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)**

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3810	3530	3270	3020
-25	3850	3570	3310	3060
-20	3900	3620	3350	3100
-15	3950	3670	3400	3150
-10	4000	3710	3450	3190
-5	4050	3760	3490	3240
0	4100	3810	3540	3280
5	4150	3860	3580	3320
10	4200	3900	3630	3370
15	4240	3950	3670	3410
20	4290	3990	3710	3450
25	4330	4030	3750	3490
30	4380	4080	3800	3530
35	4420	4120	3840	3570
40	4470	4170	3880	3610
45	4520	4210	3930	3650
48	4550	4250	3960	3690

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3680	3410	3150	2910
-25	3720	3450	3190	2950
-20	3760	3490	3230	2990
-15	3800	3530	3270	3030
-10	3850	3580	3320	3070
-5	3900	3620	3360	3110
0	3940	3670	3400	3160
5	3990	3710	3450	3200
10	4040	3750	3490	3240
15	4080	3790	3530	3270
20	4120	3830	3570	3310
25	4160	3870	3600	3350
30	4200	3910	3640	3390
35	4240	3950	3680	3420
40	4280	3990	3720	3460
45	4330	4040	3760	3500
48	4360	4070	3790	3530

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3540	3280	3040	2810
-25	3580	3320	3070	2840
-20	3620	3360	3110	2880
-15	3660	3400	3150	2910
-10	3700	3440	3190	2950
-5	3750	3480	3230	2990
0	3790	3520	3270	3030
5	3830	3560	3310	3070
10	3870	3600	3350	3110
15	3910	3640	3380	3140
20	3950	3680	3420	3170
25	3990	3710	3460	3210
30	4020	3750	3490	3240
35	4060	3790	3530	3280
40	4100	3820	3560	3310
45	4140	3860	3600	3350
48	4170	3890	3630	3380

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3420	3170	2930	2720
-25	3450	3200	2960	2750
-20	3490	3230	2990	2780
-15	3520	3270	3030	2810
-10	3560	3310	3070	2840
-5	3600	3350	3100	2880
0	3640	3380	3140	2910
5	3680	3420	3180	2940
10	3720	3460	3210	2980
15	3750	3490	3250	3010
20	3790	3530	3280	3040
25	3820	3560	3310	3070
30	3860	3590	3340	3100
35	3890	3630	3380	3140
40	3930	3660	3410	3170
45	3960	3700	3440	3200
48	3990	3720	3470	3230

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3290	3050	2840	2630
-25	3320	3080	2870	2660
-20	3360	3110	2890	2690
-15	3390	3140	2920	2720
-10	3430	3180	2950	2750
-5	3460	3210	2980	2780
0	3500	3250	3010	2810
5	3530	3280	3050	2840
10	3570	3320	3080	2860
15	3600	3350	3110	2890
20	3630	3380	3140	2920
25	3660	3410	3170	2940
30	3690	3440	3200	2970
35	3720	3470	3230	3000
40	3760	3500	3260	3030
45	3790	3530	3290	3060
48	3820	3560	3320	3080

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3180	2960	2750	2540
-25	3200	2980	2770	2570
-20	3230	3010	2800	2590
-15	3260	3040	2820	2620
-10	3290	3060	2850	2650
-5	3330	3090	2880	2670
0	3360	3120	2910	2700
5	3390	3150	2940	2730
10	3420	3180	2960	2760
15	3450	3210	2990	2780
20	3480	3240	3010	2810
25	3510	3260	3030	2830
30	3530	3290	3060	2850
35	3560	3320	3090	2880
40	3590	3350	3110	2900
45	3620	3380	3140	2930
48	3650	3400	3170	2950

**TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.**

Figure S66-1 (Sheet 4 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3920	3640	3370	3120
-25	3970	3690	3420	3160
-20	4020	3730	3460	3210
-15	4070	3780	3510	3250
-10	4120	3830	3560	3300
-5	4180	3880	3610	3350
0	4230	3940	3660	3390
5	4290	3990	3710	3440
10	4340	4040	3750	3490
15	4380	4080	3800	3530
20	4430	4130	3840	3570
25	4480	4170	3890	3610
30	4530	4220	3930	3660
35	4580	4270	3980	3700
40	4620	4310	4020	3740
45	4680	4360	4070	3790
46	4690	4380	4080	3800

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3780	3510	3250	3010
-25	3830	3550	3290	3050
-20	3870	3600	3340	3090
-15	3920	3640	3380	3130
-10	3970	3690	3430	3170
-5	4020	3740	3470	3220
0	4070	3790	3520	3260
5	4120	3830	3560	3310
10	4170	3880	3610	3350
15	4210	3920	3650	3390
20	4250	3960	3690	3430
25	4300	4000	3730	3470
30	4340	4050	3770	3510
35	4380	4090	3810	3550
40	4430	4130	3850	3590
45	4480	4180	3900	3630
46	4490	4190	3910	3640

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3650	3380	3130	2890
-25	3690	3420	3170	2930
-20	3730	3460	3210	2970
-15	3770	3500	3250	3010
-10	3820	3550	3290	3050
-5	3860	3590	3330	3090
0	3910	3640	3380	3130
5	3960	3680	3420	3170
10	4000	3720	3460	3210
15	4040	3760	3500	3250
20	4080	3800	3530	3280
25	4120	3840	3570	3320
30	4160	3880	3610	3360
35	4200	3920	3650	3390
40	4240	3950	3690	3430
45	4280	4000	3730	3470
46	4300	4010	3740	3480

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3510	3260	3010	2800
-25	3550	3290	3050	2830
-20	3590	3330	3090	2860
-15	3630	3370	3120	2890
-10	3670	3410	3160	2930
-5	3710	3450	3200	2960
0	3750	3490	3240	3000
5	3800	3530	3280	3040
10	3830	3570	3320	3080
15	3870	3600	3350	3110
20	3910	3640	3390	3140
25	3940	3670	3420	3180
30	3980	3710	3450	3210
35	4020	3750	3490	3250
40	4050	3780	3520	3280
45	4090	3820	3560	3320
46	4110	3830	3580	3330

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3380	3130	2910	2700
-25	3420	3170	2940	2730
-20	3450	3200	2970	2760
-15	3490	3240	3000	2790
-10	3530	3270	3030	2830
-5	3560	3310	3070	2860
0	3600	3350	3110	2890
5	3640	3390	3140	2920
10	3680	3420	3180	2950
15	3710	3450	3210	2980
20	3740	3490	3240	3010
25	3770	3520	3270	3040
30	3810	3550	3300	3070
35	3840	3580	3340	3100
40	3870	3620	3370	3130
45	3910	3650	3400	3170
46	3920	3660	3410	3180

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3260	3030	2820	2610
-25	3290	3060	2850	2640
-20	3320	3090	2870	2670
-15	3350	3110	2900	2690
-10	3390	3140	2930	2720
-5	3420	3180	2960	2750
0	3460	3210	2990	2780
5	3490	3250	3020	2810
10	3520	3280	3050	2840
15	3550	3310	3070	2870
20	3580	3340	3100	2890
25	3610	3360	3130	2920
30	3640	3390	3160	2940
35	3670	3420	3190	2970
40	3700	3450	3220	2990
45	3740	3490	3250	3020
46	3750	3500	3260	3030

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S661 (Sheet 5 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3990	3700	3430	3180
-30	4040	3750	3480	3220
-25	4090	3800	3530	3270
-20	4150	3850	3580	3320
-15	4200	3910	3630	3360
-10	4260	3960	3680	3410
-5	4310	4010	3730	3460
0	4370	4070	3780	3510
5	4430	4120	3840	3560
10	4480	4170	3890	3610
15	4530	4220	3930	3660
20	4580	4270	3980	3700
25	4640	4320	4030	3750
30	4690	4370	4070	3790
35	4740	4420	4120	3840
40	4790	4470	4170	3880
44	4840	4520	4220	3930

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3850	3570	3310	3060
-30	3900	3620	3350	3100
-25	3940	3660	3400	3150
-20	3990	3710	3440	3190
-15	4040	3760	3490	3240
-10	4100	3810	3540	3280
-5	4150	3860	3590	3330
0	4200	3910	3640	3380
5	4250	3960	3690	3420
10	4300	4010	3730	3470
15	4350	4050	3770	3510
20	4400	4100	3820	3550
25	4440	4140	3860	3590
30	4490	4190	3900	3630
35	4540	4230	3950	3680
40	4590	4280	3990	3720
44	4630	4330	4040	3760

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3710	3440	3190	2950
-30	3750	3480	3230	2980
-25	3800	3530	3270	3030
-20	3840	3570	3310	3070
-15	3890	3610	3350	3110
-10	3930	3660	3400	3150
-5	3980	3710	3440	3190
0	4030	3750	3490	3240
5	4080	3800	3530	3280
10	4120	3840	3580	3320
15	4170	3880	3620	3360
20	4210	3930	3660	3400
25	4250	3970	3700	3440
30	4300	4010	3740	3480
35	4340	4050	3780	3520
40	4380	4090	3820	3560
44	4430	4140	3860	3600

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3570	3310	3070	2840
-30	3610	3350	3100	2880
-25	3650	3390	3140	2910
-20	3690	3430	3180	2940
-15	3740	3470	3220	2980
-10	3780	3510	3260	3020
-5	3820	3560	3300	3060
0	3870	3600	3350	3100
5	3910	3640	3390	3140
10	3950	3680	3430	3180
15	3990	3720	3460	3220
20	4030	3760	3500	3250
25	4070	3800	3540	3290
30	4110	3830	3570	3320
35	4150	3870	3610	3360
40	4190	3910	3650	3400
44	4230	3950	3690	3430

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3440	3190	2960	2750
-30	3480	3220	2990	2780
-25	3510	3260	3020	2810
-20	3550	3300	3050	2840
-15	3590	3330	3090	2880
-10	3630	3370	3130	2910
-5	3670	3410	3170	2940
0	3710	3450	3210	2980
5	3750	3490	3250	3010
10	3790	3530	3280	3040
15	3820	3560	3310	3080
20	3860	3600	3350	3110
25	3890	3630	3380	3140
30	3930	3670	3410	3180
35	3960	3700	3450	3210
40	4000	3740	3480	3240
44	4040	3770	3520	3280

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3310	3080	2870	2660
-30	3340	3110	2890	2680
-25	3380	3140	2920	2710
-20	3410	3170	2950	2740
-15	3450	3200	2980	2770
-10	3480	3240	3010	2800
-5	3520	3270	3040	2830
0	3560	3310	3080	2870
5	3600	3350	3110	2900
10	3630	3380	3140	2930
15	3660	3410	3170	2950
20	3690	3440	3200	2980
25	3720	3470	3230	3010
30	3760	3500	3260	3030
35	3790	3530	3290	3060
40	3820	3570	3320	3090
44	3860	3600	3360	3120

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

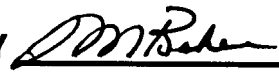
Figure S3-1 (Sheet 6 of 6)

FAA APPROVED
Airplane Flight Manual
MODEL 560
CitationV
Ultra

SERIAL -0260 THRU -0538

SUPPLEMENT 67
SPANISH REGISTERED AIRPLANES CERTIFIED FOR
STEEP APPROACHES AND SHORT FIELD LANDING
OPERATIONS

This Airplane Flight Manual Supplement is approved by the U.S. Federal Aviation Administration (FAA) on behalf of the Spanish Direccion General de Aviacion Civil (DGAC)

APPROVED BY 
Ron Rathgeber, Manager
Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas

DATE OF APPROVAL 8/26/02

26 AUGUST 2002

SUPPLEMENT 67

SPANISH REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS

Use the Log of Effective Pages to determine the current status of this supplement.

Pages affected by the current revision are indicated by an asterisk (*) preceding the page number.

Supplement Status	Date
Original	26 August 2002

LOG OF EFFECTIVE PAGES

Page Number	Page Status	Revision Number	Configuration Code
S67-1 thru S67-15/S67-16	Original	0	S67-AA

SERVICE BULLETIN CONFIGURATION LIST

The following is a list of Service Bulletins that are applicable to the operation of the airplane, and have been incorporated into this supplement. This list contains only those Service Bulletins that are currently active.

<u>Number</u>	<u>Title</u>	<u>Airplane Serial Effectivity</u>	<u>Revision Incorporated</u>	<u>Incorporated in Airplane</u>
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AIRPLANE CONFIGURATION CODES

The following is a list of airplane configuration codes which appear at the bottom of each page of this supplement to the basic FAA Approved Airplane Flight Manual, and indicates page effectivity by serial number. This list contains only the configurations which have been incorporated into this supplement.

<u>Configuration Code</u>	<u>Effectivity by Serial Number</u>
S67-AA	Airplanes 560-0260 thru -0538, Spanish Registered Airplanes Certified for Steep Approaches and Short Field Landing Operations.

SPANISH REGISTERED AIRPLANES CERTIFIED FOR STEEP APPROACHES AND SHORT FIELD LANDING OPERATIONS

INTRODUCTION

This supplement is part of, and must be placed in, the basic FAA Approved Airplane Flight Manual for Airplanes Certified for Steep Approaches and Short Field Operations. The information contained herein supplements the information of the basic FAA Approved Airplane Flight Manual. For limitations, procedures and performance information not contained in this supplement, consult the basic FAA Approved Airplane Flight Manual.

OPERATING LIMITATIONS

The nosewheel steering, antiskid system, speed brakes, and thrust reversers must be operative.

LANDING GEAR LIFE LIMITS:

Each full stop landing shall be multiplied by a factor of 1.33 for calculating replacement life of all components.

WEIGHT AND CENTER OF GRAVITY LIMITATIONS:

- a. Maximum Landing Weight - 12,000 lbs.

LANDING OPERATIONAL LIMITS:

- a. Airspeed - $V_{REF} + 5$ KIAS.
- b. Deliberate single-engine approaches are not approved.
- c. Minimum visual guidance intercept is 1000 feet AGL.
- d. Maximum altitude limit is 5000 feet.
- e. Tailwind landings prohibited.

KINDS OF OPERATIONS:

- a. The airplane is approved for manually flown steep approaches in visual or instrument meteorological conditions, with no icing conditions, using an approved visual or ILS glide path reference system.
- b. This supplement does not constitute operational approval to conduct steep approach and short field landing operations.

PERFORMANCE LIMITATIONS:

- a. The data in this supplement are predicated on the use of an approach path angle of 5.5 degrees, and a screen height of 35 feet.
- b. The airplane must be in the "Both Engines Operating" configuration.

OPERATING PROCEDURES

The operating procedures are the same as those in the basic FAA Approved Airplane Flight Manual except as follows:

CAUTION

MINIMUM ALTITUDE FOR INITIATING A GO-AROUND IS 40 FEET ABOVE THE AIRFIELD APPROACH MINIMUM.

EMERGENCY PROCEDURES

No change.

ABNORMAL PROCEDURES

ENGINE FAILURE DURING APPROACH

1. Throttle (Operating Engine) - T.O. power.
2. Airplane Pitch Attitude - 10 degrees (Go-around mode on flight director for reference).
3. Flaps - T.O. & APPR.

NOTE

The landing gear warning horn cannot be silenced if the landing gear is retracted prior to the flaps reaching T.O. & APPR position.

4. Speed Brakes - CONFIRM RETRACTED.
5. Climb Speed - $V_{REF} + 10$ KIAS minimum.
6. Landing Gear - UP (when positive rate-of-climb is established).
7. Flaps - RETRACT at 400 feet or above.
8. Climb Speed - V_{ENR} .
9. Thrust - Maximum continuous power.

NORMAL PROCEDURES

BEFORE LANDING (To be completed not later than 2 NM before the FAP/FAF)

1. Seats, Seat Belts, and Shoulder Harnesses - SECURE.
2. Avionics and Flight Instruments - CHECK.
3. Radar Altimeter - SET.
4. $V_{REF} + 5$ KIAS and Fan Speed Settings - CONFIRM.
5. Passenger Advisory Lights - PASS SAFETY.
6. Passenger Seats - CHECK FULL UPRIGHT, OUTBOARD, and POSITIONED AFT or FORWARD to clear exit doors.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

BEFORE LANDING (To be completed not later than 2 NM before the FAP/FAF) (Continued)

7. Flaps - T.O. and APPR.
8. Engine Synchronizer - OFF.
9. Ground Idle Switch - NORM.
10. Fuel Crossfeed - OFF.
11. Ignition - ON.
12. Landing Gear - DOWN and LOCKED.
13. Antiskid - CHECK ON.
14. Speed Brakes - EXTEND.
15. Flaps - LAND.
16. Landing Lights - As Required.
17. Airspeed - $V_{REF} + 5$ KIAS.
18. Autopilot & Yaw Damper - OFF.
19. Annunciator Panel - CLEAR (except for speed brake).
20. Pressurization - CHECK ZERO DIFFERENTIAL.

NOTE

On intercepting the glide slope, reduce power to idle to initiate descent and then modulate as necessary to maintain glide slope and $V_{REF} + 5$ KIAS approach speed. Descent rate of 750 to 1100 feet/minute (5.5° approach angle).

LANDING

1. Throttles - IDLE.

NOTE

Eight seconds after touchdown, engines will spool down from flight idle to ground idle if the flight idle switch is in NORM position.

(Continued Next Page)

NORMAL PROCEDURES (Continued)

LANDING (Continued)

2. Brakes - APPLY (after touchdown).

CAUTION

IF DURING LANDING, A HARD BRAKE PEDAL - NO BRAKING CONDITION IS ENCOUNTERED, OPERATE THE EMERGENCY BRAKE SYSTEM. MAINTENANCE IS REQUIRED BEFORE NEXT FLIGHT.

NOTE

To obtain maximum braking performance from the antiskid system, the pilot must apply continuous maximum effort (no modulation) to the brake pedals.

3. Thrust Reversers - DEPLOY (after nosewheel on ground).

WARNING

DO NOT ATTEMPT TO RESTOW REVERSERS AND TAKE OFF ONCE REVERSERS HAVE STARTED TO DEPLOY.

NOTE

To prevent any possible nose up pitch during thrust reverser deployment, maintain forward pressure on the control column after the nosewheel is on the ground.

4. Reverser Indicator Lights - CHECK ILLUMINATION OF ARM, UNLOCK AND DEPLOY LIGHTS.
5. Reverser Power - MAX REVERSE (do not exceed 76.6% fan speed when OAT is below -18°C or 80.1% fan speed at or above -18°C OAT).
6. Thrust Reversers - REVERSE LEVERS TO IDLE REVERSE AT 60 KIAS.

PROCEDURES FOR USE OF STEEP APPROACH AND LANDING PERFORMANCE TABLES

1. Determine gross weight of airplane at the time of arrival at the destination airport.
2. Obtain airport information; i.e., active runway, available runway length, temperature, altitude, wind, icing conditions and runway gradient if applicable.
3. Determine wind component parallel to active runway from the crosswind component chart (Figure 4-12).
4. The maximum landing weight for all conditions presented in this supplement is 12,000 pounds. If this limitation restricts the landing weight, the pilot must burn off fuel prior to landing.
5. Determine the landing field length, V_{APP} and $V_{REF} +5$ KIAS, from Figure S67-1, then apply the appropriate factors from the note below. If the available runway length is less than the landing field length required, the airplane landing weight must be reduced.

NOTE

- To obtain performance data for values not listed on the table, use the next higher increment for weight, altitude and temperature.
 - Multiply the landing field length by 1.15 for -1 percent (downhill) runway gradient; by 1.45 for -2 percent (downhill) runway gradient. For positive (uphill) runway gradients, use the landing field length obtained from Figure S67-1.
 - For residual ice on the wing leading edge, multiply the landing field length by 1.3 and add 8 knots to both V_{APP} and $V_{REF} +5$ KIAS speeds.
 - The actual landing distances were multiplied by 1.82 (as allowed with the thrust reversers) to determine the required landing field lengths presented in Figure S67-1.
6. Determine the takeoff thrust setting from Figure 4-9 in the event that a go-around is necessary.
 7. The approach climb and landing climb gradient tables are presented in Figures 4-38 and 4-39.

LANDING FIELD LENGTH - FEET

FLAPS - FULL
SEA LEVEL

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3530	3270	3020	2790
-20	3570	3310	3060	2820
-15	3610	3350	3100	2860
-10	3650	3390	3130	2900
-5	3690	3430	3170	2930
0	3740	3470	3210	2970
5	3780	3510	3250	3010
10	3820	3550	3290	3050
15	3860	3580	3320	3080
20	3890	3620	3360	3110
25	3930	3660	3400	3150
30	3970	3690	3430	3180
35	4000	3730	3460	3220
40	4040	3770	3500	3250
45	4090	3800	3540	3290
50	4130	3850	3580	3330
54	4170	3880	3620	3360

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3420	3160	2920	2700
-20	3450	3200	2950	2730
-15	3490	3230	2990	2760
-10	3530	3270	3020	2790
-5	3560	3310	3060	2830
0	3600	3340	3100	2860
5	3640	3380	3130	2900
10	3680	3420	3170	2930
15	3710	3450	3200	2960
20	3750	3480	3230	3000
25	3780	3520	3270	3030
30	3820	3550	3300	3060
35	3850	3580	3330	3090
40	3890	3620	3360	3120
45	3920	3650	3400	3160
50	3960	3690	3440	3190
54	4000	3730	3470	3230

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3300	3050	2820	2620
-20	3330	3080	2850	2640
-15	3370	3120	2880	2670
-10	3400	3150	2910	2700
-5	3440	3180	2950	2730
0	3470	3220	2980	2760
5	3510	3250	3020	2790
10	3540	3290	3050	2820
15	3570	3320	3080	2850
20	3600	3350	3110	2880
25	3630	3380	3140	2910
30	3670	3410	3170	2930
35	3700	3440	3200	2960
40	3730	3470	3230	2990
45	3760	3510	3260	3030
50	3800	3540	3290	3060
54	3830	3570	3330	3090

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3190	2950	2740	2530
-20	3220	2970	2760	2560
-15	3250	3000	2790	2580
-10	3280	3030	2820	2610
-5	3310	3070	2840	2640
0	3340	3100	2870	2670
5	3380	3130	2900	2690
10	3410	3160	2930	2720
15	3430	3190	2960	2740
20	3460	3220	2980	2770
25	3490	3250	3010	2790
30	3520	3270	3040	2820
35	3550	3300	3060	2840
40	3580	3330	3090	2870
45	3610	3360	3120	2900
50	3640	3390	3150	2930
54	3670	3420	3180	2960

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3080	2860	2650	2450
-20	3100	2890	2680	2470
-15	3130	2910	2700	2500
-10	3160	2930	2730	2520
-5	3190	2960	2750	2550
0	3220	2990	2780	2580
5	3250	3010	2800	2600
10	3270	3040	2830	2620
15	3300	3060	2850	2650
20	3330	3090	2870	2670
25	3350	3110	2890	2690
30	3380	3140	2910	2710
35	3400	3160	2940	2730
40	3430	3190	2960	2760
45	3460	3220	2990	2780
50	3490	3250	3020	2810
54	3520	3280	3050	2830

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	2990	2780	2570	2370
-20	3010	2800	2590	2390
-15	3030	2820	2610	2410
-10	3050	2840	2630	2430
-5	3080	2860	2660	2460
0	3100	2890	2680	2480
5	3120	2910	2710	2510
10	3150	2930	2730	2530
15	3170	2950	2750	2550
20	3190	2970	2770	2570
25	3220	2990	2790	2590
30	3240	3010	2810	2610
35	3260	3030	2830	2630
40	3280	3050	2850	2650
45	3310	3080	2870	2670
50	3340	3110	2900	2700
54	3360	3130	2920	2720

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S67-1 (Sheet 1 of 6)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
1000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3630	3370	3110	2870
-20	3680	3410	3150	2910
-15	3720	3450	3190	2950
-10	3760	3490	3230	2990
-5	3810	3530	3270	3030
0	3850	3580	3320	3070
5	3890	3620	3360	3110
10	3940	3660	3400	3150
15	3980	3700	3430	3180
20	4020	3740	3470	3220
25	4060	3780	3510	3260
30	4100	3810	3550	3290
35	4140	3850	3580	3330
40	4180	3890	3620	3370
45	4220	3930	3660	3400
50	4270	3980	3700	3440
52	4290	4000	3730	3460

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3510	3250	3010	2770
-20	3550	3290	3040	2810
-15	3590	3330	3080	2840
-10	3630	3370	3120	2880
-5	3670	3410	3160	2920
0	3710	3450	3190	2960
5	3750	3490	3230	2990
10	3790	3520	3270	3030
15	3830	3560	3300	3060
20	3860	3590	3340	3100
25	3900	3630	3370	3130
30	3940	3670	3410	3160
35	3970	3700	3440	3200
40	4010	3740	3480	3230
45	4050	3780	3510	3270
50	4090	3820	3550	3300
52	4120	3840	3570	3320

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3390	3140	2900	2690
-20	3420	3170	2930	2720
-15	3460	3210	2970	2750
-10	3500	3240	3000	2780
-5	3530	3280	3040	2810
0	3570	3320	3070	2840
5	3610	3350	3110	2880
10	3650	3390	3140	2910
15	3680	3420	3170	2940
20	3710	3450	3210	2970
25	3750	3480	3240	3000
30	3780	3520	3270	3030
35	3810	3550	3300	3060
40	3850	3580	3330	3100
45	3880	3620	3370	3130
50	3920	3660	3400	3160
52	3940	3680	3420	3180

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3270	3030	2810	2600
-20	3300	3060	2840	2630
-15	3330	3090	2860	2660
-10	3370	3120	2890	2680
-5	3400	3160	2920	2710
0	3440	3190	2950	2740
5	3470	3220	2990	2770
10	3500	3260	3020	2800
15	3540	3290	3050	2830
20	3570	3320	3080	2850
25	3600	3340	3110	2880
30	3630	3370	3130	2910
35	3660	3400	3160	2930
40	3690	3430	3190	2960
45	3720	3470	3220	2990
50	3760	3500	3260	3030
52	3770	3520	3280	3040

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3150	2930	2720	2520
-20	3180	2960	2750	2540
-15	3210	2980	2770	2570
-10	3240	3010	2800	2590
-5	3280	3040	2830	2620
0	3310	3070	2850	2650
5	3340	3100	2880	2680
10	3370	3130	2900	2700
15	3400	3150	2930	2720
20	3420	3180	2950	2750
25	3450	3210	2980	2770
30	3480	3230	3000	2790
35	3500	3260	3030	2820
40	3530	3290	3060	2840
45	3560	3320	3080	2870
50	3600	3350	3120	2890
52	3610	3370	3130	2910

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3060	2840	2640	2430
-20	3080	2870	2660	2450
-15	3100	2890	2680	2480
-10	3130	2910	2700	2500
-5	3150	2940	2730	2530
0	3180	2960	2760	2550
5	3210	2990	2780	2580
10	3230	3010	2800	2600
15	3260	3030	2830	2620
20	3280	3050	2850	2640
25	3310	3070	2870	2670
30	3330	3100	2890	2690
35	3360	3120	2910	2710
40	3380	3150	2930	2730
45	3410	3170	2950	2750
50	3440	3200	2980	2780
52	3450	3220	2990	2790

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S67-1 (Sheet 2)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
2000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS				
VREF + 5 = 99 KIAS		VAPP = 101 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3740	3470	3210	2970
-20	3780	3510	3250	3010
-15	3830	3550	3290	3050
-10	3880	3600	3340	3090
-5	3920	3640	3380	3130
0	3970	3690	3420	3170
5	4020	3730	3470	3210
10	4060	3780	3510	3250
15	4110	3820	3550	3290
20	4150	3860	3590	3330
25	4190	3900	3630	3370
30	4230	3940	3670	3410
35	4270	3980	3710	3450
40	4320	4030	3750	3490
45	4360	4070	3790	3520
50	4410	4120	3830	3570

WEIGHT = 11500 POUNDS				
VREF + 5 = 97 KIAS		VAPP = 99 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3610	3350	3100	2860
-20	3650	3390	3140	2900
-15	3690	3430	3170	2940
-10	3740	3470	3210	2970
-5	3780	3510	3260	3010
0	3820	3550	3300	3050
5	3870	3600	3340	3090
10	3910	3640	3380	3130
15	3950	3670	3410	3170
20	3990	3710	3450	3200
25	4030	3750	3490	3240
30	4060	3790	3520	3270
35	4100	3820	3560	3310
40	4140	3860	3600	3340
45	4180	3900	3630	3380
50	4230	3950	3680	3420

WEIGHT = 11000 POUNDS				
VREF + 5 = 95 KIAS		VAPP = 97 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3480	3230	2990	2760
-20	3520	3260	3020	2790
-15	3560	3300	3060	2830
-10	3600	3340	3090	2860
-5	3640	3380	3130	2900
0	3680	3420	3170	2930
5	3720	3460	3210	2970
10	3760	3490	3240	3010
15	3790	3530	3280	3040
20	3830	3560	3310	3070
25	3860	3600	3340	3100
30	3900	3630	3380	3140
35	3930	3670	3410	3170
40	3970	3700	3450	3200
45	4010	3740	3480	3240
50	4050	3780	3520	3270

WEIGHT = 10500 POUNDS				
VREF + 5 = 93 KIAS		VAPP = 94 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3360	3110	2880	2680
-20	3390	3140	2910	2700
-15	3430	3180	2940	2730
-10	3460	3210	2970	2760
-5	3500	3250	3010	2790
0	3540	3290	3040	2820
5	3570	3320	3080	2850
10	3610	3360	3110	2880
15	3640	3390	3140	2910
20	3670	3420	3180	2940
25	3710	3450	3210	2970
30	3740	3480	3240	3000
35	3770	3510	3270	3030
40	3800	3540	3300	3060
45	3840	3580	3330	3100
50	3880	3620	3370	3130

WEIGHT = 10000 POUNDS				
VREF + 5 = 91 KIAS		VAPP = 92 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3240	3000	2790	2590
-20	3270	3030	2820	2610
-15	3300	3060	2850	2640
-10	3330	3090	2870	2670
-5	3370	3120	2900	2700
0	3400	3160	2930	2730
5	3430	3190	2960	2750
10	3470	3220	2990	2780
15	3500	3250	3020	2810
20	3520	3280	3040	2830
25	3550	3310	3070	2850
30	3580	3330	3100	2880
35	3610	3360	3130	2900
40	3640	3390	3160	2930
45	3670	3420	3180	2960
50	3710	3460	3220	2990

WEIGHT = 9500 POUNDS				
VREF + 5 = 89 KIAS		VAPP = 90 KIAS		
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-25	3130	2910	2700	2500
-20	3150	2940	2730	2520
-15	3180	2960	2750	2550
-10	3200	2990	2780	2570
-5	3240	3010	2800	2600
0	3270	3040	2830	2630
5	3300	3070	2860	2650
10	3330	3090	2880	2680
15	3350	3110	2900	2700
20	3380	3140	2930	2720
25	3400	3170	2950	2750
30	3430	3190	2970	2770
35	3460	3220	2990	2790
40	3480	3240	3020	2810
45	3510	3270	3040	2840
50	3540	3300	3070	2870

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S67-1 (Sheet 3)

LANDING FIELD LENGTH - FEET

**FLAPS - FULL
3000 FEET**

**CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET**

**ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)**

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3810	3530	3270	3020
-25	3850	3570	3310	3060
-20	3900	3620	3350	3100
-15	3950	3670	3400	3150
-10	4000	3710	3450	3190
-5	4050	3760	3490	3240
0	4100	3810	3540	3280
5	4150	3860	3580	3320
10	4200	3900	3630	3370
15	4240	3950	3670	3410
20	4290	3990	3710	3450
25	4330	4030	3750	3490
30	4380	4080	3800	3530
35	4420	4120	3840	3570
40	4470	4170	3880	3610
45	4520	4210	3930	3650
48	4550	4250	3960	3690

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3680	3410	3150	2910
-25	3720	3450	3190	2950
-20	3760	3490	3230	2990
-15	3800	3530	3270	3030
-10	3850	3580	3320	3070
-5	3900	3620	3360	3110
0	3940	3670	3400	3160
5	3990	3710	3450	3200
10	4040	3750	3490	3240
15	4080	3790	3530	3270
20	4120	3830	3570	3310
25	4160	3870	3600	3350
30	4200	3910	3640	3390
35	4240	3950	3680	3420
40	4280	3990	3720	3460
45	4330	4040	3760	3500
48	4360	4070	3790	3530

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3540	3280	3040	2810
-25	3580	3320	3070	2840
-20	3620	3360	3110	2880
-15	3660	3400	3150	2910
-10	3700	3440	3190	2950
-5	3750	3480	3230	2990
0	3790	3520	3270	3030
5	3830	3560	3310	3070
10	3870	3600	3350	3110
15	3910	3640	3380	3140
20	3950	3680	3420	3170
25	3990	3710	3460	3210
30	4020	3750	3490	3240
35	4060	3790	3530	3280
40	4100	3820	3560	3310
45	4140	3860	3600	3350
48	4170	3890	3630	3380

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3420	3170	2930	2720
-25	3450	3200	2960	2750
-20	3490	3230	2990	2780
-15	3520	3270	3030	2810
-10	3560	3310	3070	2840
-5	3600	3350	3100	2880
0	3640	3380	3140	2910
5	3680	3420	3180	2940
10	3720	3460	3210	2980
15	3750	3490	3250	3010
20	3790	3530	3280	3040
25	3820	3560	3310	3070
30	3860	3590	3340	3100
35	3890	3630	3380	3140
40	3930	3660	3410	3170
45	3960	3700	3440	3200
48	3990	3720	3470	3230

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3290	3050	2840	2630
-25	3320	3080	2870	2660
-20	3360	3110	2890	2690
-15	3390	3140	2920	2720
-10	3430	3180	2950	2750
-5	3460	3210	2980	2780
0	3500	3250	3010	2810
5	3530	3280	3050	2840
10	3570	3320	3080	2860
15	3600	3350	3110	2890
20	3630	3380	3140	2920
25	3660	3410	3170	2940
30	3690	3440	3200	2970
35	3720	3470	3230	3000
40	3760	3500	3260	3030
45	3790	3530	3290	3060
48	3820	3560	3320	3080

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3180	2960	2750	2540
-25	3200	2980	2770	2570
-20	3230	3010	2800	2590
-15	3260	3040	2820	2620
-10	3290	3060	2850	2650
-5	3330	3090	2880	2670
0	3360	3120	2910	2700
5	3390	3150	2940	2730
10	3420	3180	2960	2760
15	3450	3210	2990	2780
20	3480	3240	3010	2810
25	3510	3260	3030	2830
30	3530	3290	3060	2850
35	3560	3320	3090	2880
40	3590	3350	3110	2900
45	3620	3380	3140	2930
48	3650	3400	3170	2950

**TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.**

Figure S67-1 (Sheet 4)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
4000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3920	3640	3370	3120
-25	3970	3690	3420	3160
-20	4020	3730	3460	3210
-15	4070	3780	3510	3250
-10	4120	3830	3560	3300
-5	4180	3880	3610	3350
0	4230	3940	3660	3390
5	4290	3990	3710	3440
10	4340	4040	3750	3490
15	4380	4080	3800	3530
20	4430	4130	3840	3570
25	4480	4170	3890	3610
30	4530	4220	3930	3660
35	4580	4270	3980	3700
40	4620	4310	4020	3740
45	4680	4360	4070	3790
46	4690	4380	4080	3800

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3780	3510	3250	3010
-25	3830	3550	3290	3050
-20	3870	3600	3340	3090
-15	3920	3640	3380	3130
-10	3970	3690	3430	3170
-5	4020	3740	3470	3220
0	4070	3790	3520	3260
5	4120	3830	3560	3310
10	4170	3880	3610	3350
15	4210	3920	3650	3390
20	4250	3960	3690	3430
25	4300	4000	3730	3470
30	4340	4050	3770	3510
35	4380	4090	3810	3550
40	4430	4130	3850	3590
45	4480	4180	3900	3630
46	4490	4190	3910	3640

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3650	3380	3130	2890
-25	3690	3420	3170	2930
-20	3730	3460	3210	2970
-15	3770	3500	3250	3010
-10	3820	3550	3290	3050
-5	3860	3590	3330	3090
0	3910	3640	3380	3130
5	3960	3680	3420	3170
10	4000	3720	3460	3210
15	4040	3760	3500	3250
20	4080	3800	3530	3280
25	4120	3840	3570	3320
30	4160	3880	3610	3360
35	4200	3920	3650	3390
40	4240	3950	3690	3430
45	4280	4000	3730	3470
46	4300	4010	3740	3480

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3510	3260	3010	2800
-25	3550	3290	3050	2830
-20	3590	3330	3090	2860
-15	3630	3370	3120	2890
-10	3670	3410	3160	2930
-5	3710	3450	3200	2960
0	3750	3490	3240	3000
5	3800	3530	3280	3040
10	3830	3570	3320	3080
15	3870	3600	3350	3110
20	3910	3640	3390	3140
25	3940	3670	3420	3180
30	3980	3710	3450	3210
35	4020	3750	3490	3250
40	4050	3780	3520	3280
45	4090	3820	3560	3320
46	4110	3830	3580	3330

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3380	3130	2910	2700
-25	3420	3170	2940	2730
-20	3450	3200	2970	2760
-15	3490	3240	3000	2790
-10	3530	3270	3030	2830
-5	3560	3310	3070	2860
0	3600	3350	3110	2890
5	3640	3390	3140	2920
10	3680	3420	3180	2950
15	3710	3450	3210	2980
20	3740	3490	3240	3010
25	3770	3520	3270	3040
30	3810	3550	3300	3070
35	3840	3580	3340	3100
40	3870	3620	3370	3130
45	3910	3650	3400	3170
46	3920	3660	3410	3180

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-30	3260	3030	2820	2610
-25	3290	3060	2850	2640
-20	3320	3090	2870	2670
-15	3350	3110	2900	2690
-10	3390	3140	2930	2720
-5	3420	3180	2960	2750
0	3460	3210	2990	2780
5	3490	3250	3020	2810
10	3520	3280	3050	2840
15	3550	3310	3070	2870
20	3580	3340	3100	2890
25	3610	3360	3130	2920
30	3640	3390	3160	2940
35	3670	3420	3190	2970
40	3700	3450	3220	2990
45	3740	3490	3250	3020
46	3750	3500	3260	3030

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S67-1 (Sheet 5)

LANDING FIELD LENGTH - FEET

FLAPS - FULL
5000 FEET

CONDITIONS: LANDING GEAR - DOWN
SPEED BRAKES - EXTENDED
AIRSPEED - VREF + 5 KIAS AT 35 FEET

ANTI-ICE SYSTEMS - OFF
THRUST - REFER TO NORMAL PROCEDURES - LANDING
(IN THIS SUPPLEMENT)

WEIGHT = 12000 POUNDS VREF + 5 = 99 KIAS VAPP = 101 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3990	3700	3430	3180
-30	4040	3750	3480	3220
-25	4090	3800	3530	3270
-20	4150	3850	3580	3320
-15	4200	3910	3630	3360
-10	4260	3960	3680	3410
-5	4310	4010	3730	3460
0	4370	4070	3780	3510
5	4430	4120	3840	3560
10	4480	4170	3890	3610
15	4530	4220	3930	3660
20	4580	4270	3980	3700
25	4640	4320	4030	3750
30	4690	4370	4070	3790
35	4740	4420	4120	3840
40	4790	4470	4170	3880
44	4840	4520	4220	3930

WEIGHT = 11500 POUNDS VREF + 5 = 97 KIAS VAPP = 99 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3850	3570	3310	3060
-30	3900	3620	3350	3100
-25	3940	3660	3400	3150
-20	3990	3710	3440	3190
-15	4040	3760	3490	3240
-10	4100	3810	3540	3280
-5	4150	3860	3590	3330
0	4200	3910	3640	3380
5	4250	3960	3690	3420
10	4300	4010	3730	3470
15	4350	4050	3770	3510
20	4400	4100	3820	3550
25	4440	4140	3860	3590
30	4490	4190	3900	3630
35	4540	4230	3950	3680
40	4590	4280	3990	3720
44	4630	4330	4040	3760

WEIGHT = 11000 POUNDS VREF + 5 = 95 KIAS VAPP = 97 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3710	3440	3190	2950
-30	3750	3480	3230	2980
-25	3800	3530	3270	3030
-20	3840	3570	3310	3070
-15	3890	3610	3350	3110
-10	3930	3660	3400	3150
-5	3980	3710	3440	3190
0	4030	3750	3490	3240
5	4080	3800	3530	3280
10	4120	3840	3580	3320
15	4170	3880	3620	3360
20	4210	3930	3660	3400
25	4250	3970	3700	3440
30	4300	4010	3740	3480
35	4340	4050	3780	3520
40	4380	4090	3820	3560
44	4430	4140	3860	3600

WEIGHT = 10500 POUNDS VREF + 5 = 93 KIAS VAPP = 94 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3570	3310	3070	2840
-30	3610	3350	3100	2880
-25	3650	3390	3140	2910
-20	3690	3430	3180	2940
-15	3740	3470	3220	2980
-10	3780	3510	3260	3020
-5	3820	3560	3300	3060
0	3870	3600	3350	3100
5	3910	3640	3390	3140
10	3950	3680	3430	3180
15	3990	3720	3460	3220
20	4030	3760	3500	3250
25	4070	3800	3540	3290
30	4110	3830	3570	3320
35	4150	3870	3610	3360
40	4190	3910	3650	3400
44	4230	3950	3690	3430

WEIGHT = 10000 POUNDS VREF + 5 = 91 KIAS VAPP = 92 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3440	3190	2960	2750
-30	3480	3220	2990	2780
-25	3510	3260	3020	2810
-20	3550	3300	3050	2840
-15	3590	3330	3090	2880
-10	3630	3370	3130	2910
-5	3670	3410	3170	2940
0	3710	3450	3210	2980
5	3750	3490	3250	3010
10	3790	3530	3280	3040
15	3820	3560	3310	3080
20	3860	3600	3350	3110
25	3890	3630	3380	3140
30	3930	3670	3410	3180
35	3960	3700	3450	3210
40	4000	3740	3480	3240
44	4040	3770	3520	3280

WEIGHT = 9500 POUNDS VREF + 5 = 89 KIAS VAPP = 90 KIAS				
TEMP DEG C	ZERO WIND	10 KTS	HEADWINDS 20 KTS	30 KTS
-35	3310	3080	2870	2660
-30	3340	3110	2890	2680
-25	3380	3140	2920	2710
-20	3410	3170	2950	2740
-15	3450	3200	2980	2770
-10	3480	3240	3010	2800
-5	3520	3270	3040	2830
0	3560	3310	3080	2870
5	3600	3350	3110	2900
10	3630	3380	3140	2930
15	3660	3410	3170	2950
20	3690	3440	3200	2980
25	3720	3470	3230	3010
30	3760	3500	3260	3030
35	3790	3530	3290	3060
40	3820	3570	3320	3090
44	3860	3600	3360	3120

TO OBTAIN FIELD LENGTH WITH RESIDUAL ICE ON WING LEADING EDGE, REFER TO LANDING PROCEDURES.
TO OBTAIN FIELD LENGTH WITH NEGATIVE (DOWNHILL) RUNWAY GRADIENT, REFER TO LANDING PROCEDURES.

Figure S67-1 (Sheet 6)

WEIGHT AND BALANCE DATA AND AIRPLANE EQUIPMENT LIST

This section consists of a copy of the Weight and Balance Data Sheet and the Airplane Equipment List, both of which are furnished with the airplane.

ADVISORY INFORMATION
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INTRODUCTION

The following information is considered the most accurate and practical guidance material available for wet and adverse runway operations. This advisory information is not FAA approved.

DATA FOR WET, SLUSH, SNOW AND ICE COVERED RUNWAYS

LIMITATIONS

Maximum Takeoff Weight	16,300 Pounds
Maximum Landing Weight	15,200 Pounds

PERFORMANCE

The takeoff field length and landing distance tables presented in Section IV are based on a paved, dry runway. For takeoffs and landings on precipitation covered runways, use the following tables and correction factors.

WARNING

THESE DISTANCES AND CORRECTION FACTORS FOR WET AND ADVERSE RUNWAY CONDITIONS ARE APPROXIMATE, AND ARE TO BE CONSIDERED MINIMUMS, AS ACTUAL RUNWAY CONDITIONS MAY REQUIRE DISTANCES GREATER THAN THOSE DETERMINED.

DEFINITIONS

Runway Contaminated by
Compacted Snow:

A runway is considered contaminated by compacted snow when covered by snow which has been compressed into a solid mass which resists further compression and will hold together or break into lumps if picked up.

Runway Contaminated
by Standing Water,
Slush or Loose Snow:

A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used, is covered by surface water, more than 3mm (0.125 inch) deep, or by slush, or loose snow, equivalent to more than 3mm (0.125 inch) of water.

Runway Contaminated by Wet Ice:

A runway surface condition where braking action is expected to be very low, due to the presence of wet ice.

Wet Runway:

A runway is considered wet when there is sufficient moisture on the surface to appear reflective, but without significant areas of standing water.

WET RUNWAY TAKEOFF PERFORMANCE

Determine the takeoff field length using Figure 7-2 (flaps 7°) or Figure 7-4 (flaps 15°) from the following pages for a wet runway, anti-ice systems off. For anti-ice on or for runway gradients, make adjustments according to Figure 7-1 (flaps 7°) or Figure 7-3 (flaps 15°). Then determine the takeoff field length for a dry runway for the same conditions, using Section IV and any appropriate correction factors. The takeoff field length is the longer of the wet or dry takeoff field lengths. Use the V_1 determined from the wet runway performance.

EXAMPLE FOR TAKEOFF WITH 7 DEGREE FLAPS:

Pressure Altitude = 1,000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 16,300 POUNDS	Anti-Ice Systems = ON
Ambient Temperature = 15°C	Runway Condition = WET
Wind = 10 KNOTS (HEADWIND)	

From Figure 7-2, the Takeoff Field Length is 3,800 FEET (wet runway, anti-ice systems off). $V_1 = 87$ KNOTS.

From Figure 7-1, the anti-ice systems ON Takeoff Field Length = $3,800 \times 1.1 = 4,180$ FEET. $V_1 = 87$ KNOTS + 2 = 89 KNOTS.

From Figure 4-18, the Takeoff Field Length is 3,280 FEET (dry runway, anti-ice systems off). $V_1 = 99$ KNOTS.

Using the anti-ice ON correction factor from Figure 4-17 (flaps 7°), the anti-ice systems ON: Takeoff Field Length = $3,280 \times 1.16 = 3,805$ FEET. $V_1 = 99$ KNOTS.

Takeoff Field Length for above conditions = 4,180 FEET and $V_1 = 89$ KNOTS.

EXAMPLE FOR TAKEOFF WITH 15 DEGREE FLAPS:

Pressure Altitude = 1,000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 16,000 POUNDS	Anti-Ice Systems = ON
Ambient Temperature = 20°C	Runway Condition = WET
Wind = 20 KNOTS (HEADWIND)	

From Figure 7-4, the Takeoff Field Length is 3,530 FEET (wet runway, anti-ice systems off). $V_1 = 86$ KNOTS.

From Figure 7-3, the anti-ice systems ON Takeoff Field Length = $3,530 \times 1.1 = 3,883$ FEET. $V_1 = 86$ KNOTS + 2 = 88 KNOTS.

From Figure 4-20, the Takeoff Field Length is 2,860 FEET (dry runway, anti-ice systems off). $V_1 = 94$ KNOTS.

Using the anti-ice ON correction factor from Figure 4-19 (flaps 15°) the anti-ice systems ON: Takeoff Field Length = $2,860 \times 1.1 = 3,146$ FEET. $V_1 = 94 + 1 = 95$ KNOTS.

Takeoff Field Length for above conditions = 3,883 FEET and $V_1 = 88$ KNOTS.

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 7°

Determine takeoff field length, V_1 , V_R , V_2 , and V_{ENR} from Figure 7-2 and correct for runway gradient and anti-icing requirements using Figure 7-1.

If the reduced distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 7°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

RUNWAY GRADIENT	SHADED AREA		NON-SHADED AREA	
	V_1 *	MULTIPLY DISTANCE BY	V_1 *	MULTIPLY DISTANCE BY
2% UPHILL	ADD 6 KNOTS	1.67	ADD 6 KNOTS	1.67
1% UPHILL	ADD 4 KNOTS	1.15	ADD 4 KNOTS	1.15
1% DOWNHILL	SUBTRACT 5 KNOTS	1.00	ADD 1 KNOT	1.10
2% DOWNHILL	SUBTRACT 9 KNOTS	1.00	ADD 1 KNOT	1.15

CORRECTION FACTORS - ANTI-ICE ON	
V_1 - KIAS	ADD 2 KNOTS
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.10

- * If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .



Figure 7-1

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° SEA LEVEL

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS												WEIGHT = 16000 LBS											
VENR = 172 KIAS												VENR = 171 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS
	10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT						10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-25	87	4680	87	3440	88	3150	89	2920	91	2700	107 117	-25	87	4660	87	3430	87	3090	88	2820	89	2600	105 116
-20	87	4780	87	3520	88	3210	89	2980	91	2760	107 117	-20	87	4760	87	3510	87	3160	88	2880	89	2660	105 116
-15	87	4870	87	3590	88	3280	89	3040	91	2820	107 117	-15	87	4850	87	3580	87	3220	88	2930	89	2710	105 116
-10	87	4970	87	3670	88	3340	89	3100	90	2870	107 117	-10	87	4950	87	3660	87	3290	88	2990	89	2770	106 116
-5	87	5070	87	3740	87	3400	89	3160	90	2930	107 117	-5	87	5040	87	3730	87	3360	88	3050	89	2830	106 116
0	87	5160	87	3810	87	3470	89	3230	90	2990	107 117	0	87	5140	87	3800	87	3430	87	3110	89	2880	105 116
5	87	5260	87	3880	87	3530	89	3290	90	3050	107 117	5	87	5230	87	3870	87	3490	87	3170	89	2940	105 116
10	87	5350	87	3960	87	3600	89	3350	90	3110	107 117	10	87	5330	87	3950	87	3560	87	3230	89	3000	105 116
15	87	5450	87	4030	87	3670	88	3410	90	3170	107 117	15	87	5430	87	4020	87	3630	87	3290	89	3060	105 116
20	86	5490	86	4070	87	3760	89	3510	90	3260	107 117	20	86	5470	86	4050	86	3660	87	3380	89	3140	105 116
25	86	5530	86	4130	87	3860	89	3600	90	3350	107 117	25	86	5510	86	4080	86	3720	88	3470	89	3230	105 116
30	84	5420	87	4340	89	4060	90	3790	91	3520	106 116	30	84	5390	86	4180	87	3910	88	3650	90	3390	105 115
35	84	5570	88	4600	90	4300	91	4010	92	3730	106 116	35	83	5370	87	4440	89	4150	90	3860	91	3590	105 115
40	86	5930	90	4890	91	4570	92	4260	93	3970	106 116	40	84	5720	89	4710	90	4400	91	4100	92	3820	105 115
45	87	6330	91	5220	93	4880	94	4550	95	4230	106 116	45	86	6090	90	5020	91	4690	92	4380	94	4070	105 115
50	89	6770	93	5580	94	5220	95	4860	96	4530	106 116	50	88	6520	92	5370	93	5020	94	4680	95	4350	105 115
54	90	7160	94	5900	95	5510	96	5140	97	4780	106 116	54	89	6890	93	5670	94	5300	95	4940	96	4590	105 115

WEIGHT = 15500 LBS												WEIGHT = 15000 LBS											
VENR = 171 KIAS												VENR = 169 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2 KIAS
	10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT						10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-25	88	4640	88	3420	88	3080	88	2770	88	2470	104 114	-25	88	4610	88	3410	88	3070	88	2760	88	2470	102 113
-20	88	4730	88	3490	88	3150	88	2830	88	2530	104 114	-20	88	4700	88	3480	88	3140	88	2820	88	2530	102 113
-15	88	4820	88	3570	88	3210	88	2890	88	2590	104 114	-15	88	4800	88	3560	88	3210	88	2880	88	2590	102 113
-10	87	4920	87	3640	87	3280	87	2950	87	2650	104 114	-10	88	4890	88	3630	88	3270	88	2950	88	2640	102 113
-5	87	5010	87	3710	87	3350	87	3010	87	2700	104 114	-5	88	4980	88	3700	88	3340	88	3010	88	2700	102 113
0	87	5100	87	3780	87	3410	87	3070	87	2760	104 114	0	88	5070	88	3770	88	3400	88	3070	88	2750	102 113
5	87	5190	87	3850	87	3480	87	3130	87	2810	104 114	5	87	5160	87	3840	87	3470	87	3130	87	2810	102 113
10	87	5290	87	3930	87	3550	87	3190	87	2870	104 114	10	87	5260	87	3910	87	3530	87	3190	87	2870	102 113
15	87	5390	87	4000	87	3610	87	3260	87	2930	104 114	15	87	5350	87	3980	87	3600	87	3250	87	2920	102 113
20	87	5430	87	4030	87	3640	87	3280	87	2950	104 114	20	87	5390	87	4010	87	3630	87	3270	87	2950	102 112
25	86	5460	86	4060	86	3670	86	3310	87	3030	104 114	25	86	5420	86	4040	86	3660	86	3300	86	2970	102 112
30	84	5350	84	3970	85	3670	86	3420	88	3180	104 114	30	84	5300	84	3950	84	3570	84	3220	85	2980	102 112
35	82	5190	85	4170	86	3890	88	3630	89	3370	104 114	35	82	5140	83	3910	84	3650	85	3400	87	3160	102 112
40	82	5370	87	4420	88	4130	89	3850	90	3580	104 114	40	80	5040	84	4150	86	3880	87	3610	88	3360	102 112
45	84	5720	88	4710	89	4400	90	4100	91	3810	104 114	45	82	5370	86	4420	87	4120	88	3840	89	3570	102 112
50	86	6110	89	5030	91	4700	92	4380	93	4070	104 114	50	84	5730	87	4710	88	4400	90	4100	91	3810	102 112
54	87	6450	91	5310	92	4960	93	4620	94	4300	104 114	54	85	6030	88	4960	90	4630	91	4320	92	4010	102 112

WEIGHT = 14500 LBS										VENR = 169 KIAS		WEIGHT = 14000 LBS										VENR = 168 KIAS	
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR V2		
	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT			30 KTS V1 DIST KIAS FT											
-25	88	4590	88 3410	88 3070	88 2760	88 2470	100 111	-25	88	4580	88 3400	88 3070	88 2760	88 2480	98 110								
-20	88	4680	88 3480	88 3140	88 2820	88 2530	100 111	-20	88	4670	88 3470	88 3140	88 2820	88 2530	98 110								
-15	88	4770	88 3550	88 3200	88 2880	88 2590	100 111	-15	88	4760	88 3540	88 3200	88 2880	88 2590	98 110								
-10	88	4870	88 3620	88 3270	88 2940	88 2640	100 111	-10	88	4850	88 3620	88 3270	88 2940	88 2650	98 110								
-5	88	4960	88 3690	88 3330	88 3000	88 2700	100 111	-5	88	4940	88 3690	88 3330	88 3000	88 2700	98 110								
0	88	5040	88 3760	88 3400	88 3060	88 2750	100 111	0	88	5020	88 3750	88 3390	88 3060	88 2750	98 110								
5	88	5130	88 3830	88 3460	88 3120	88 2810	100 111	5	88	5110	88 3820	88 3460	88 3120	88 2810	98 110								
10	88	5230	88 3900	88 3530	88 3180	88 2860	100 111	10	88	5200	88 3890	88 3520	88 3180	88 2870	98 110								
15	88	5320	88 3970	88 3590	88 3240	88 2920	100 111	15	88	5290	88 3960	88 3590	88 3240	88 2920	98 110								
20	87	5350	87 4000	87 3620	87 3270	87 2940	100 111	20	87	5330	87 3990	87 3610	87 3270	87 2940	98 110								
25	86	5390	86 4030	86 3650	86 3290	86 2970	100 111	25	87	5360	87 4020	87 3640	87 3290	87 2960	98 110								
30	85	5270	85 3940	85 3560	85 3210	85 2890	100 111	30	85	5230	85 3920	85 3550	85 3210	85 2890	98 109								
35	82	5100	82 3810	82 3450	83 3180	84 2950	100 110	35	82	5070	82 3800	82 3430	82 3100	82 2790	98 109								
40	80	4940	82 3890	83 3630	85 3380	86 3140	100 110	40	80	4900	80 3670	81 3390	82 3150	83 2930	98 109								
45	80	5030	84 4140	85 3860	86 3590	87 3340	100 110	45	78	4730	81 3860	83 3600	84 3350	85 3110	98 109								
50	81	5360	85 4410	86 4110	87 3830	88 3560	100 110	50	79	5010	83 4120	84 3840	85 3570	86 3310	98 108								
54	83	5640	86 4640	87 4330	88 4030	89 3740	100 110	54	80	5270	84 4330	85 4040	86 3760	87 3490	98 108								

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 7°
SEA LEVEL****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS								VENR = 168 KIAS								WEIGHT = 13000 LBS								VENR = 167 KIAS							
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2								
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS										
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-25	89	4570	89	3400	89	3070	89	2770	89	2480	97	109	-25	89	4560	89	3410	89	3080	89	2780	89	2490	95	107						
-20	89	4650	89	3470	89	3140	89	2830	89	2540	97	109	-20	89	4650	89	3480	89	3150	89	2840	89	2550	95	107						
-15	89	4740	89	3540	89	3200	89	2890	89	2600	97	109	-15	89	4730	89	3550	89	3210	89	2900	89	2610	95	107						
-10	88	4830	88	3610	88	3270	88	2950	88	2650	97	109	-10	89	4820	89	3620	89	3270	89	2960	89	2660	95	107						
-5	88	4920	88	3680	88	3330	88	3010	88	2710	97	109	-5	89	4910	89	3690	89	3340	89	3020	89	2720	95	107						
0	88	5010	88	3750	88	3390	88	3070	88	2760	97	109	0	89	5000	89	3750	89	3400	89	3070	89	2770	95	107						
5	88	5090	88	3820	88	3460	88	3120	88	2810	97	109	5	88	5080	88	3820	88	3460	88	3130	88	2820	95	107						
10	88	5180	88	3890	88	3520	88	3180	88	2870	97	109	10	88	5170	88	3890	88	3530	88	3190	88	2880	95	107						
15	88	5270	88	3960	88	3590	88	3240	88	2920	97	109	15	88	5260	88	3960	88	3590	88	3250	88	2930	95	107						
20	87	5300	87	3980	87	3610	87	3270	87	2950	97	108	20	88	5290	88	3980	88	3610	88	3270	88	2950	95	107						
25	87	5330	87	4010	87	3630	87	3290	87	2970	96	108	25	87	5320	87	4010	87	3640	87	3290	87	2970	95	107						
30	85	5210	85	3910	85	3550	85	3210	85	2890	96	108	30	85	5180	85	3910	85	3540	85	3210	85	2890	95	106						
35	83	5040	83	3780	83	3420	83	3090	83	2790	96	107	35	83	5010	83	3770	83	3420	83	3090	83	2790	94	106						
40	80	4870	80	3650	80	3300	80	2980	81	2730	96	107	40	81	4840	81	3640	81	3290	81	2970	81	2680	94	105						
45	78	4700	79	3600	80	3360	81	3120	82	2900	96	107	45	78	4670	78	3500	78	3170	79	2910	80	2690	94	105						
50	77	4680	80	3840	82	3580	83	3330	84	3090	96	107	50	76	4500	78	3570	79	3330	80	3090	81	2870	94	105						
54	78	4920	82	4030	83	3760	84	3500	85	3240	96	107	54	76	4580	79	3750	80	3500	81	3250	82	3020	94	105						

WEIGHT = 12500 LBS								VENR = 167 KIAS								WEIGHT = 12000 LBS								VENR = 166 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2 KIAS								
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS										
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST														
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT		KIAS FT	KIAS FT	KIAS FT					
-25	89	4560	89	3420	89	3090	89	2790	89	2510	94	107	-25	90	4570	90	3430	90	3110	90	2810	90	2530	94	108						
-20	89	4650	89	3490	89	3160	89	2850	89	2560	94	107	-20	90	4650	90	3500	90	3170	90	2870	90	2580	94	108						
-15	89	4730	89	3560	89	3220	89	2910	89	2620	94	107	-15	89	4740	89	3570	89	3240	89	2930	89	2640	94	108						
-10	89	4820	89	3630	89	3290	89	2970	89	2670	94	107	-10	89	4830	89	3640	89	3300	89	2990	89	2690	94	108						
-5	89	4910	89	3690	89	3350	89	3030	89	2730	94	107	-5	89	4910	89	3710	89	3360	89	3040	89	2750	94	108						
0	89	4990	89	3760	89	3410	89	3080	89	2780	94	107	0	89	4990	89	3770	89	3430	89	3100	89	2800	94	108						
5	89	5080	89	3830	89	3470	89	3140	89	2840	93	107	5	89	5080	89	3840	89	3490	89	3160	89	2850	94	107						
10	89	5160	89	3900	89	3540	89	3200	89	2890	93	106	10	89	5160	89	3910	89	3550	89	3220	89	2910	94	107						
15	89	5250	89	3960	89	3600	89	3260	89	2940	93	106	15	89	5250	89	3980	89	3610	89	3280	89	2960	94	107						
20	88	5280	88	3990	88	3620	88	3280	88	2960	93	106	20	88	5280	88	4000	88	3630	88	3290	88	2980	93	107						
25	87	5300	87	4010	87	3640	87	3300	87	2980	93	106	25	88	5300	88	4020	88	3650	88	3310	88	3000	93	106						
30	86	5170	86	3910	86	3550	86	3210	86	2900	93	105	30	86	5160	86	3910	86	3550	86	3220	86	2910	91	104						
35	83	4990	83	3770	83	3420	83	3090	83	2790	93	104	35	84	4980	84	3770	84	3420	84	3100	84	2800	91	103						
40	81	4810	81	3630	81	3290	81	2970	81	2680	92	104	40	81	4800	81	3620	81	3290	81	2970	81	2680	90	102						
45	78	4640	78	3490	78	3160	78	2850	78	2570	92	103	45	79	4620	79	3480	79	3150	79	2850	79	2570	90	102						
50	76	4470	76	3360	76	3090	78	2870	79	2660	92	103	50	76	4450	76	3350	76	3030	76	2730	76	2470	90	101						
54	74	4350	77	3480	78	3240	79	3010	80	2790	92	103	54	74	4320	74	3240	75	3010	76	2790	77	2580	90	101						

WEIGHT = 11500 LBS										VENR = 165 KIAS										WEIGHT = 11000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST							V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT										
-25	90	4580	90	3460	90	3130	90	2830	90	2570	95	109	-25	90	4610	90	3490	90	3160	90	2860	90	2610	96	110														
-20	90	4670	90	3530	90	3200	90	2890	90	2620	95	109	-20	90	4690	90	3550	90	3230	90	2920	90	2660	96	110														
-15	90	4750	90	3590	90	3260	90	2950	90	2670	95	109	-15	90	4780	90	3620	90	3290	90	2980	90	2710	96	110														
-10	90	4840	90	3660	90	3320	90	3010	90	2720	95	109	-10	90	4860	90	3690	90	3350	90	3040	90	2760	96	110														
-5	90	4930	90	3730	90	3390	90	3070	90	2770	95	109	-5	90	4950	90	3760	90	3420	90	3100	90	2810	96	110														
0	90	5010	90	3790	90	3450	90	3120	90	2820	95	109	0	90	5030	90	3820	90	3480	90	3150	90	2850	96	110														
5	89	5090	89	3860	89	3510	89	3180	89	2880	95	108	5	90	5110	90	3890	90	3540	90	3210	90	2910	95	110														
10	89	5170	89	3930	89	3570	89	3240	89	2930	95	108	10	90	5190	90	3960	90	3600	90	3270	90	2960	95	109														
15	89	5260	89	4000	89	3630	89	3300	89	2990	95	108	15	90	5280	90	4020	90	3660	90	3330	90	3020	95	109														
20	89	5280	89	4020	89	3650	89	3320	89	3000	94	108	20	89	5300	89	4040	89	3680	89	3340	89	3030	95	109														
25	88	5310	88	4040	88	3670	88	3330	88	3020	93	107	25	88	5320	88	4060	88	3700	88	3360	88	3040	94	108														
30	86	5160	86	3920	86	3570	86	3240	86	2930	91	104	30	87	5170	87	3940	87	3590	87	3260	87	2950	92	105														
35	84	4970	84	3780	84	3430	84	3110	84	2810	89	102	35	84	4980	84	3790	84	3450	84	3130	84	2830	89	102														
40	81	4790	81	3630	81	3290	81	2980	81	2690	88	101	40	82	4780	82	3630	82	3300	82	2990	82	2710	86	99														
45	79	4600	79	3480	79	3150	79	2850	79	2580	88	100	45	79	4590	79	3480	79	3160	79	2860	79	2600	86	99														
50	76	4420	76	3340	76	3020	76	2730	76	2480	88	100	50	77	4410	77	3340	77	3020	77	2740	77	2490	86	98														
54	74	4300	74	3230	74	2930	74	2640	74	2400	88	99	54	75	4280	75	3230	75	2920	75	2650	75	2410	86	98														



Figure 7-2 (Sheet 2 of 30)

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 1000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
VENR = 170 KIAS										VENR = 170 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-25	88 4890	88 3610	88 3250	89 3010	90 2790	107 117				-25	88 4870	88 3600	88 3240	88 2910	89 2690	106 116			
-20	88 4990	88 3680	88 3320	89 3070	90 2850	107 117				-20	88 4970	88 3670	88 3310	88 2970	89 2740	106 116			
-15	87 5100	87 3760	87 3390	89 3130	90 2910	107 117				-15	88 5070	88 3750	88 3380	88 3040	89 2800	106 116			
-10	87 5200	87 3840	87 3460	89 3200	90 2970	107 117				-10	88 5180	88 3830	88 3450	88 3110	89 2860	106 116			
-5	87 5300	87 3920	87 3530	88 3260	90 3030	107 117				-5	87 5280	87 3910	87 3520	87 3170	88 2920	106 116			
0	87 5410	87 4000	87 3610	88 3320	90 3090	107 117				0	87 5380	87 3990	87 3600	87 3240	88 2980	106 116			
5	87 5510	87 4080	87 3680	88 3390	89 3150	107 117				5	87 5490	87 4070	87 3670	87 3310	88 3030	106 116			
10	87 5620	87 4160	87 3750	88 3450	89 3210	107 117				10	87 5590	87 4140	87 3740	87 3370	88 3090	106 116			
15	87 5670	87 4200	87 3800	88 3540	90 3300	107 117				15	87 5640	87 4180	87 3780	87 3420	88 3180	105 116			
20	86 5630	86 4220	87 3950	89 3680	90 3430	107 117				20	86 5600	86 4160	86 3800	88 3550	89 3300	105 116			
25	84 5580	87 4400	88 4110	89 3840	91 3570	107 116				25	84 5550	85 4240	87 3960	88 3700	89 3440	105 115			
30	84 5630	88 4660	89 4350	91 4060	92 3780	106 116				30	82 5430	87 4490	88 4200	89 3920	91 3640	105 115			
35	85 5970	89 4940	91 4620	92 4310	93 4010	106 116				35	84 5760	88 4760	89 4450	91 4150	92 3860	105 115			
40	87 6360	91 5260	92 4920	93 4590	94 4270	106 116				40	85 6130	89 5060	91 4730	92 4420	93 4110	105 115			
45	88 6800	92 5620	93 5250	94 4900	96 4560	106 116				45	87 6550	91 5400	92 5050	93 4710	94 4390	105 115			
50	90 7290	94 6010	95 5620	96 5240	97 4880	106 116				50	89 7010	92 5780	93 5400	95 5040	96 4690	105 115			
52	90 7500	94 6180	95 5780	96 5390	97 5020	106 116				52	89 7210	93 5940	94 5550	95 5180	96 4820	105 115			

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 169 KIAS										VENR = 169 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-25	88 4840	88 3580	88 3230	88 2900	88 2600	104 114				-25	88 4820	88 3570	88 3220	88 2900	88 2600	102 113			
-20	88 4940	88 3660	88 3300	88 2970	88 2660	104 114				-20	88 4910	88 3650	88 3290	88 2960	88 2660	102 113			
-15	88 5040	88 3740	88 3370	88 3030	88 2720	104 114				-15	88 5010	88 3720	88 3360	88 3030	88 2720	102 113			
-10	88 5140	88 3810	88 3440	88 3100	88 2780	104 114				-10	88 5110	88 3800	88 3430	88 3090	88 2780	102 113			
-5	88 5240	88 3890	88 3510	88 3160	88 2840	104 114				-5	88 5210	88 3880	88 3500	88 3160	88 2840	102 113			
0	88 5350	88 3970	88 3580	88 3230	88 2900	104 114				0	88 5310	88 3950	88 3570	88 3220	88 2900	102 113			
5	88 5450	88 4050	88 3660	88 3300	88 2960	104 114				5	88 5410	88 4030	88 3640	88 3290	88 2960	102 113			
10	87 5550	87 4120	87 3730	87 3360	87 3020	104 114				10	88 5510	88 4110	88 3710	88 3350	88 3020	102 113			
15	87 5590	87 4160	87 3760	87 3390	87 3050	104 114				15	87 5550	87 4140	87 3750	87 3380	87 3050	102 113			
20	86 5560	86 4130	86 3740	86 3370	87 3100	104 114				20	86 5520	86 4110	86 3720	86 3360	86 3030	102 112			
25	84 5500	84 4090	85 3720	86 3400	87 3230	104 114				25	85 5450	85 4070	85 3680	85 3320	85 3030	102 112			
30	82 5340	85 4210	86 3940	87 3670	89 3420	104 114				30	82 5300	82 3950	84 3690	85 3440	86 3200	102 112			
35	82 5410	86 4470	87 4170	89 3890	90 3620	104 114				35	80 5140	84 4190	85 3910	86 3650	88 3400	102 112			
40	83 5750	87 4750	89 4440	90 4140	91 3850	104 114				40	81 5400	85 4450	86 4160	88 3870	89 3600	102 112			
45	85 6140	89 5060	90 4730	91 4410	92 4110	104 114				45	83 5750	87 4740	88 4430	89 4130	90 3840	102 112			
50	87 6560	90 5410	91 5060	92 4710	93 4390	104 114				50	85 6140	88 5060	89 4730	90 4410	91 4100	102 112			
52	87 6740	91 5560	92 5190	93 4840	94 4510	104 114				52	85 6310	89 5200	90 4850	91 4520	92 4210	102 112			

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
VENR = 168 KIAS										VENR = 167 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-25	88 4800	88 3570	88 3220	88 2900	88 2600	100 111				-25	89 4780	89 3560	89 3220	89 2900	89 2600	98 110			
-20	88 4890	88 3640	88 3290	88 2960	88 2660	100 111				-20	89 4870	89 3640	89 3290	89 2960	89 2660	98 110			
-15	88 4990	88 3710	88 3360	88 3020	88 2720	100 111				-15	89 4970	89 3710	89 3350	89 3020	89 2720	98 110			
-10	88 5080	88 3790	88 3430	88 3090	88 2780	100 111				-10	88 5060	88 3780	88 3420	88 3090	88 2780	98 110			
-5	88 5180	88 3870	88 3500	88 3150	88 2840	100 111				-5	88 5160	88 3860	88 3490	88 3150	88 2840	98 110			
0	88 5280	88 3940	88 3570	88 3220	88 2900	100 111				0	88 5260	88 3940	88 3560	88 3220	88 2900	98 110			
5	88 5380	88 4020	88 3640	88 3280	88 2960	100 111				5	88 5350	88 4010	88 3630	88 3280	88 2960	98 110			
10	88 5480	88 4090	88 3700	88 3350	88 3020	100 111				10	88 5450	88 4080	88 3700	88 3340	88 3020	98 110			
15	87 5520	87 4130	87 3740	87 3380	87 3040	100 111				15	88 5490	88 4120	88 3730	88 3370	88 3040	98 110			
20	86 5480	86 4100	86 3710	86 3350	86 3020	100 111				20	86 5450	86 4090	86 3700	86 3350	86 3020	98 110			
25	85 5420	85 4050	85 3670	85 3310	85 2980	100 111				25	85 5380	85 4040	85 3660	85 3310	85 2980	98 109			
30	83 5250	83 3930	83 3560	83 3220	84 2990	100 110				30	83 5220	83 3910	83 3540	83 3200	83 2880	98 109			
35	80 5100	82 3920	83 3660	84 3410	85 3170	100 110				35	81 5060	81 3790	81 3430	82 3190	83 2960	98 109			
40	79 5060	83 4170	84 3890	85 3630	87 3370	100 110				40	78 4890	81 3890	82 3630	83 3380	84 3140	98 109			
45	81 5390	85 4430	86 4140	87 3860	88 3590	100 110				45	78 5030	82 4150	83 3870	84 3600	86 3340	98 108			
50	82 5740	86 4730	87 4410	88 4110	89 3820	100 110				50	80 5360	84 4410	85 4120	86 3830	87 3560	98 108			
52	83 5890	87 4850	88 4530	89 4220	90 3920	100 110				52	81 5500	84 4520	85 4220	86 3930	87 3650	98 108			

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
1000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
 LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
 ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
		TAILWIND		ZERO WIND		H E A D W I N D S						TAILWIND		ZERO WIND		H E A D W I N D S									
TEMP DEG C	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS			
-25	89	4770	89	3560	89	3220	89	2900	89	2610	97	109	-25	89	4760	89	3570	89	3230	89	2910	89	2620	95	107
-20	89	4860	89	3630	89	3290	89	2970	89	2670	97	109	-20	89	4850	89	3640	89	3290	89	2970	89	2680	95	107
-15	89	4950	89	3710	89	3360	89	3030	89	2730	97	109	-15	89	4940	89	3710	89	3360	89	3040	89	2740	95	107
-10	89	5050	89	3780	89	3420	89	3090	89	2780	97	109	-10	89	5040	89	3790	89	3430	89	3100	89	2790	95	107
-5	89	5140	89	3860	89	3490	89	3160	89	2840	97	109	-5	89	5130	89	3860	89	3500	89	3160	89	2850	95	107
0	89	5240	89	3930	89	3560	89	3220	89	2900	97	109	0	89	5230	89	3930	89	3570	89	3230	89	2910	95	107
5	88	5330	88	4010	88	3630	88	3280	88	2960	97	109	5	89	5320	89	4010	89	3630	89	3290	89	2970	95	107
10	88	5430	88	4080	88	3700	88	3350	88	3020	97	109	10	89	5410	89	4080	89	3700	89	3350	89	3030	95	107
15	88	5460	88	4110	88	3730	88	3370	88	3050	97	109	15	88	5450	88	4110	88	3730	88	3380	88	3050	95	107
20	87	5420	87	4080	87	3700	87	3350	87	3020	96	108	20	87	5400	87	4070	87	3700	87	3350	87	3020	95	107
25	85	5350	85	4030	85	3650	85	3300	85	2980	96	108	25	86	5330	86	4020	86	3650	86	3300	86	2980	95	107
30	83	5190	83	3900	83	3530	83	3190	83	2880	96	107	30	83	5160	83	3890	83	3530	83	3190	83	2880	94	106
35	81	5020	81	3770	81	3420	81	3090	81	2780	96	107	35	81	4990	81	3760	81	3410	81	3080	81	2770	94	105
40	78	4850	78	3640	80	3390	81	3150	82	2930	96	107	40	79	4820	79	3630	79	3280	79	2960	79	2720	94	105
45	76	4700	80	3860	81	3600	82	3350	83	3110	96	107	45	76	4660	77	3590	79	3350	80	3120	81	2890	94	105
50	78	5000	81	4110	82	3830	83	3570	84	3310	96	107	50	75	4660	79	3820	80	3570	81	3320	82	3080	94	105
52	78	5130	82	4210	83	3930	84	3660	85	3400	96	107	52	76	4780	80	3920	81	3660	82	3400	83	3150	94	105

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
		TAILWIND		ZERO WIND		H E A D W I N D S						TAILWIND		ZERO WIND		H E A D W I N D S									
TEMP DEG C	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS			
-25	90	4760	90	3580	90	3240	90	2930	90	2630	94	107	-25	90	4770	90	3590	90	3260	90	2940	90	2650	95	108
-20	89	4850	89	3650	89	3310	89	2990	89	2690	94	107	-20	90	4860	90	3660	90	3320	90	3010	90	2710	95	108
-15	89	4940	89	3720	89	3370	89	3050	89	2750	94	107	-15	90	4950	90	3740	90	3390	90	3070	90	2770	95	108
-10	89	5030	89	3790	89	3440	89	3110	89	2810	94	107	-10	90	5040	90	3810	90	3460	90	3130	90	2830	95	108
-5	89	5130	89	3870	89	3510	89	3180	89	2870	94	107	-5	90	5130	90	3880	90	3520	90	3190	90	2890	95	108
0	89	5220	89	3940	89	3580	89	3240	89	2930	94	107	0	89	5220	89	3950	89	3590	89	3260	89	2940	95	108
5	89	5310	89	4010	89	3640	89	3300	89	2980	94	107	5	89	5310	89	4030	89	3660	89	3320	89	3000	95	108
10	89	5400	89	4080	89	3710	89	3360	89	3040	94	107	10	89	5400	89	4100	89	3720	89	3380	89	3060	95	108
15	88	5440	88	4110	88	3740	88	3390	88	3060	93	106	15	89	5440	89	4120	89	3750	89	3400	89	3080	94	107
20	87	5390	87	4080	87	3700	87	3360	87	3030	93	106	20	88	5380	88	4080	88	3710	88	3370	88	3050	93	106
25	86	5310	86	4020	86	3650	86	3310	86	2990	93	105	25	86	5310	86	4020	86	3660	86	3320	86	3000	91	104
30	84	5140	84	3880	84	3530	84	3190	84	2880	93	105	30	84	5130	84	3880	84	3530	84	3200	84	2890	91	103
35	81	4970	81	3750	81	3400	81	3080	81	2780	92	104	35	82	4950	82	3750	82	3400	82	3080	82	2780	90	103
40	79	4790	79	3610	79	3270	79	2960	79	2670	92	103	40	79	4770	79	3610	79	3270	79	2960	79	2670	90	102
45	76	4620	76	3480	76	3150	77	2890	78	2680	92	103	45	77	4600	77	3470	77	3140	77	2840	77	2560	90	101
50	74	4470	76	3550	77	3310	79	3070	80	2850	92	103	50	74	4440	74	3340	75	3060	76	2840	77	2630	90	101
52	73	4440	77	3640	78	3390	79	3150	80	2920	92	103	52	73	4380	74	3370	75	3140	76	2910	78	2700	90	101

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS															
		TAILWIND		ZERO WIND		H E A D W I N D S						TAILWIND		ZERO WIND		H E A D W I N D S									
TEMP DEG C	10 KTS V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS			
-25	90	4780	90	3620	90	3280	90	2970	90	2680	95	109	-25	91	4810	91	3650	91	3310	91	3000	91	2720	96	110
-20	90	4870	90	3690	90	3350	90	3030	90	2740	95	109	-20	91	4900	91	3720	91	3380	91	3060	91	2780	96	110
-15	90	4960	90	3760	90	3410	90	3090	90	2790	95	109	-15	90	4980	90	3790	90	3440	90	3120	90	2830	96	110
-10	90	5050	90	3830	90	3480	90	3150	90	2850	95	109	-10	90	5070	90	3860	90	3510	90	3190	90	2880	96	110
-5	90	5140	90	3900	90	3550	90	3220	90	2910	95	109	-5	90	5160	90	3930	90	3580	90	3250	90	2940	96	110
0	90	5230	90	3980	90	3620	90	3280	90	2970	95	109	0	90	5260	90	4000	90	3650	90	3310	90	3000	96	110
5	90	5320	90	4050	90	3680	90	3340	90	3030	95	109	5	90	5340	90	4080	90	3710	90	3370	90	3060	96	110
10	90	5410	90	4120	90	3750	90	3400	90	3080	95	109	10	90	5430	90	4150	90	3780	90	3430	90	3110	96	110
15	89	5440	89	4140	89	3770	89	3420	89	3100	95	108	15	89	5460	89	4170	89	3800	89	3450	89	3130	95	109
20	88	5390	88	4100	88	3730	88	3390	88	3070	93	107	20	88	5400	88	4120	88	3760	88	3410	88	3100	94	108
25	86	5310	86	4040	86	3670	86	3330	86	3020	92	105	25	87	5310	87	4060	87	3690	87	3360	87	3040	92	106
30	84	5120	84	3890	84	3540	84	3210	84	2900	89	102	30	85	5120	85	3910	85	3550	85	3230	85	2920	89	103
35	82	4940	82	3750	82	3410	82	3090	82	2790	88	101	35	82	4940	82	3760	82	3420	82	3100	82	2800	87	100
40	79	4750	79	3600	79	3270	79	2960	79	2670	88	100	40	80	4750	80	3610	80							

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 2000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 169 KIAS										WEIGHT = 16000 LBS										VENR = 168 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS												
	10 KTS		V1 DIST		V1 DIST		20 KTS		20 KTS			30 KTS		10 KTS		V1 DIST		V1 DIST		20 KTS			20 KTS		30 KTS		10 KTS		V1 DIST		V1 DIST		20 KTS		20 KTS		30 KTS		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2	
-25	88	5120	88	3780	88	3410	88	3100	90	2880	107	117	-25	88	5100	88	3770	88	3400	88	3060	88	2770	106	116	-25	88	5100	88	3770	88	3400	88	3060	88	2770	106	116	
-20	88	5230	88	3860	88	3480	88	3170	90	2940	107	117	-20	88	5210	88	3850	88	3470	88	3120	88	2830	106	116	-20	88	5210	88	3850	88	3470	88	3120	88	2830	106	116	
-15	88	5340	88	3940	88	3560	88	3230	89	3000	107	117	-15	88	5310	88	3930	88	3550	88	3190	88	2890	106	116	-15	88	5310	88	3930	88	3550	88	3190	88	2890	106	116	
-10	88	5450	88	4030	88	3630	88	3300	89	3060	107	117	-10	88	5420	88	4020	88	3620	88	3260	88	2950	106	116	-10	88	5420	88	4020	88	3620	88	3260	88	2950	106	116	
-5	88	5560	88	4120	88	3710	88	3360	89	3120	107	117	-5	88	5540	88	4100	88	3700	88	3340	88	3010	106	116	-5	88	5540	88	4100	88	3700	88	3340	88	3010	106	116	
0	88	5680	88	4200	88	3800	88	3420	89	3180	107	117	0	88	5650	88	4190	88	3790	88	3410	88	3070	106	116	0	88	5650	88	4190	88	3790	88	3410	88	3070	106	116	
5	88	5790	88	4290	88	3870	88	3490	89	3250	107	117	5	88	5760	88	4270	88	3860	88	3480	88	3130	106	116	5	88	5760	88	4270	88	3860	88	3480	88	3130	106	116	
10	87	5900	87	4370	87	3950	87	3560	89	3310	107	117	10	88	5870	88	4350	88	3930	88	3550	88	3200	106	116	10	88	5870	88	4350	88	3930	88	3550	88	3200	106	116	
15	86	5830	86	4320	87	3980	88	3710	90	3460	107	117	15	86	5800	86	4300	86	3890	87	3580	88	3330	105	116	15	86	5800	86	4300	86	3890	87	3580	88	3330	105	116	
20	84	5710	86	4470	88	4180	89	3900	90	3640	107	116	20	84	5680	85	4300	87	4030	88	3760	89	3500	105	115	20	84	5680	85	4300	87	4030	88	3760	89	3500	105	115	
25	83	5690	88	4720	89	4410	90	4120	91	3840	106	116	25	82	5550	86	4540	88	4250	89	3970	90	3690	105	115	25	82	5550	86	4540	88	4250	89	3970	90	3690	105	115	
30	85	6040	89	4990	90	4670	91	4360	93	4070	106	116	30	83	5820	88	4810	89	4500	90	4200	91	3920	105	115	30	83	5820	88	4810	89	4500	90	4200	91	3920	105	115	
35	86	6410	90	5310	91	4970	93	4640	94	4320	106	116	35	85	6180	89	5110	90	4780	91	4460	93	4160	105	115	35	85	6180	89	5110	90	4780	91	4460	93	4160	105	115	
40	88	6840	92	5660	93	5300	94	4940	95	4610	106	116	40	86	6580	90	5450	92	5090	93	4760	94	4430	105	115	40	86	6580	90	5450	92	5090	93	4760	94	4430	105	115	
45	89	7320	93	6050	94	5660	95	5290	96	4930	106	116	45	88	7040	92	5820	93	5440	94	5080	95	4740	105	115	45	88	7040	92	5820	93	5440	94	5080	95	4740	105	115	
50	91	7860	94	6490	95	6070	96	5660	97	5280	106	116	50	89	7550	93	6230	94	5830	95	5440	96	5070	105	115	50	89	7550	93	6230	94	5830	95	5440	96	5070	105	115	

WEIGHT = 15500 LBS										VENR = 168 KIAS										WEIGHT = 15000 LBS										VENR = 167 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																					
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		10 KTS			V1 DIST		10 KTS		20 KTS		30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																
-25	88	5070	88	3760	88	3390	88	3390	88	3050	88	2740	104	114	-25	88	5040	88	3740	88	3380	88	3040	88	2730	102	113												
-20	88	5170	88	3840	88	3460	88	3120	88	2800	104	114	-20	88	5140	88	3820	88	3450	88	3110	88	2800	102	113														
-15	88	5280	88	3920	88	3540	88	3180	88	2860	104	114	-15	88	5240	88	3900	88	3530	88	3180	88	2860	102	113														
-10	88	5380	88	4000	88	3610	88	3250	88	2930	104	114	-10	88	5350	88	3980	88	3600	88	3250	88	2920	102	113														
-5	88	5500	88	4080	88	3690	88	3330	88	2990	104	114	-5	88	5460	88	4070	88	3680	88	3320	88	2990	102	113														
0	88	5610	88	4170	88	3770	88	3400	88	3060	104	114	0	88	5570	88	4150	88	3760	88	3390	88	3060	102	113														
5	88	5720	88	4250	88	3840	88	3470	88	3120	104	114	5	88	5680	88	4230	88	3830	88	3460	88	3120	102	113														
10	88	5820	88	4330	88	3920	88	3540	88	3190	104	114	10	88	5780	88	4310	88	3900	88	3530	88	3180	102	113														
15	86	5750	86	4280	86	3870	86	3490	86	3150	104	114	15	87	5710	87	4260	87	3860	87	3480	87	3140	102	112														
20	85	5630	85	4190	85	3790	86	3530	87	3290	104	114	20	85	5590	85	4170	85	3780	85	3410	85	3080	102	112														
25	83	5490	84	4270	86	3990	87	3720	88	3470	104	114	25	83	5450	83	4070	83	3740	85	3490	86	3250	102	112														
30	81	5460	86	4520	87	4230	88	3940	89	3670	104	114	30	81	5290	83	4240	85	3960	86	3700	87	3440	102	112														
35	83	5800	87	4790	88	4480	89	4180	90	3900	104	114	35	81	5440	85	4500	86	4200	87	3920	88	3650	102	112														
40	84	6170	88	5100	89	4770	91	4450	92	4150	104	114	40	82	5780	86	4780	87	4470	88	4170	90	3880	102	112														
45	86	6590	90	5450	91	5090	92	4750	93	4430	104	114	45	84	6170	88	5090	89	4760	90	4440	91	4140	102	112														
50	87	7060	91	5820	92	5450	93	5080	94	4730	104	114	50	85	6590	89	5440	90	5090	91	4740	92	4420	102	112														

WEIGHT = 14500 LBS										VENR = 166 KIAS										WEIGHT = 14000 LBS										VENR = 166 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								
	10 KTS				10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS		10 KTS					10 KTS		20 KTS		30 KTS								
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					
-25	89	5010	89	3740	89	3370	89	3040	89	2730	100	111	-25	89	5000	89	3730	89	3370	89	3040	89	2740	98	110	-25	89	5000	89	3730	89	3370	89	3040	89	2740	98	110	
-20	89	5110	89	3810	89	3450	89	3110	89	2800	100	111	-20	89	5090	89	3810	89	3440	89	3110	89	2800	98	110	-20	89	5090	89	3810	89	3440	89	3110	89	2800	98	110	
-15	89	5220	89	3890	89	3520	89	3180	89	2860	100	111	-15	89	5190	89	3890	89	3520	89	3180	89	2860	98	110	-15	89	5190	89	3890	89	3520	89	3180	89	2860	98	110	
-10	88	5320	88	3970	88	3590	88	3240	88	2920	100	111	-10	89	5300	89	3970	89	3590	89	3240	89	2920	98	110	-10	89	5300	89	3970	89	3590	89	3240	89	2920	98	110	
-5	88	5430	88	4060	88	3670	88	3320	88	2990	100	111	-5	89	5400	89	4050	89	3670	89	3310	89	2990	98	110	-5	89	5400	89	4050	89	3670	89	3310	89	2990	98	110	
0	88	5540	88	4140	88	3750	88	3390	88	3050	100	111	0	89	5510	89	4130	89	3750	89	3390	89	3060	98	110	0	89	5510	89	4130	89	3750	89	3390	89	3060	98	110	
5	88	5640	88	4220	88	3820	88	3450	88	3120	100	111	5	89	5610	89	4210	89	3820	89	3450	89	3120	98	110	5	89	5610	89	4210	89	3820	89	3450	89	3120	98	110	
10	88	5740	88	4300	88	3890	88	3520	88	3180	100	111	10	88	5710	88	4290	88	3890	88	3520	88	3180	98	110	10	88	5710	88	4290	88	3890	88	3520	88	3180	98	110	
15	87	5670	87	4240	87	3840	87	3480	87	3130	100	111	15	87	5630	87	4230	87	3830	87	3470	87	3130	98	110	15	87	5630	87	4230	87	3830	87	3470	87	3130	98	110	
20	85	5550	85	4150	85	3760	85	3400	85	3060	100	111	20	85	5510	85	4140	85	3750	85	3390	85	3060	98	109	20	85	5510	85	4140	85	3750	85	3390	85	3060	98	109	
25	83	5400	83	4050	83	3660	83	3310	84	3040	100	110	25	83	5360	83	4030	83	3650	83	3300	83	2970	98	109	25	83	5360	83	4030	83	3650	83	3300	83	2970	98	109	
30	81	5250	81	3970	82	3710	84	3460	85	3210	100	110	30	81	5210	81	3910	81	3540	81	3230	83	3000	98	109	30	81	5210	81	3910	81	3540	81	3230	83	3000	98	109	
35	79	5090	83	4210	84	3930	85	3670	86	3410	100	110	35	79	5050	80	3930	81	3670	83	3420	84	3180	98	109	35	79	5050	80	3930	81	3670	83	3420	84	3180	98	109	
40	80	5420	84	4470	85	4170	86	3890	87	3620	100	110	40	78	5060	82	4170	83	3900	84	3640	85	3380	98	109	40	78	5060	82	4170	83	3900	84	3640	85	3380	98	109	
45	82	5770	85	4760	86	4450	88	4150	89	3860	100	110	45	80	5390	83	4440	84	4150	85	3860	86	3590	98	108	45	80	5390	83	4440	84	4150	85	3860	86	3590	98	108	
50	83	6160	87	5080	88	4740	89	4420	90	4120	100	110	50	81	5740	85	4730	86	4420	87	4120	88	3830	98	108	50	81	5740	85	4730	86	4420	87	4120	88	3830	98	108	

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
2000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
 LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
 ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST
SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 165 KIAS										WEIGHT = 13000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-25	89	4980	89	3730	89	3380	89	3050	89	2740	97 109	-25	89	4970	89	3730	89	3380	89	3060	89	2750	95 107																
-20	89	5080	89	3810	89	3450	89	3110	89	2800	97 109	-20	89	5070	89	3810	89	3450	89	3120	89	2810	95 107																
-15	89	5180	89	3880	89	3520	89	3180	89	2870	97 109	-15	89	5170	89	3890	89	3520	89	3190	89	2880	95 107																
-10	89	5280	89	3960	89	3590	89	3250	89	2930	97 109	-10	89	5270	89	3960	89	3600	89	3250	89	2940	95 107																
-5	89	5380	89	4050	89	3670	89	3320	89	2990	97 109	-5	89	5370	89	4050	89	3670	89	3320	89	3000	95 107																
0	89	5490	89	4130	89	3740	89	3390	89	3060	97 109	0	89	5480	89	4130	89	3750	89	3400	89	3070	95 107																
5	89	5590	89	4210	89	3810	89	3450	89	3120	97 109	5	89	5570	89	4210	89	3820	89	3460	89	3130	95 107																
10	89	5690	89	4280	89	3890	89	3520	89	3180	97 109	10	89	5670	89	4280	89	3890	89	3520	89	3190	95 107																
15	87	5610	87	4220	87	3830	87	3470	87	3130	97 108	15	88	5590	88	4220	88	3830	88	3470	88	3140	95 107																
20	85	5480	85	4130	85	3740	85	3390	85	3060	96 108	20	86	5460	86	4120	86	3740	86	3390	86	3060	95 107																
25	83	5330	83	4010	83	3640	83	3290	83	2970	96 107	25	84	5300	84	4000	84	3630	84	3290	84	2970	94 106																
30	81	5170	81	3890	81	3520	81	3190	81	2870	96 107	30	81	5140	81	3870	81	3510	81	3180	81	2870	94 106																
35	79	5010	79	3760	79	3420	80	3190	81	2960	96 107	35	79	4970	79	3750	79	3400	79	3070	79	2770	94 105																
40	77	4850	79	3890	80	3630	82	3380	83	3140	96 107	40	77	4810	77	3620	78	3380	79	3140	80	2920	94 105																
45	77	5030	81	4140	82	3870	83	3600	84	3340	96 107	45	75	4680	78	3850	79	3590	81	3340	82	3110	94 105																
50	79	5350	82	4410	83	4110	84	3830	85	3560	96 107	50	76	4980	80	4100	81	3820	82	3560	83	3300	94 105																

WEIGHT = 12500 LBS										VENR = 163 KIAS		WEIGHT = 12000 LBS										VENR = 163 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2		
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS
-25	90	4970	90	3740	90	3390	90	3070	90	2770	95 108	-25	90	4980	90	3760	90	3410	90	3090	90	2790	95 109		
-20	90	5070	90	3820	90	3460	90	3130	90	2830	95 108	-20	90	5070	90	3830	90	3480	90	3150	90	2850	95 109		
-15	90	5160	90	3900	90	3530	90	3200	90	2890	95 108	-15	90	5170	90	3910	90	3550	90	3220	90	2910	95 109		
-10	90	5260	90	3970	90	3610	90	3270	90	2950	95 108	-10	90	5260	90	3990	90	3620	90	3280	90	2970	95 109		
-5	90	5360	90	4050	90	3680	90	3340	90	3020	95 108	-5	90	5370	90	4070	90	3700	90	3350	90	3040	95 109		
0	89	5470	89	4140	89	3760	89	3410	89	3080	95 108	0	90	5470	90	4150	90	3770	90	3420	90	3100	95 109		
5	89	5560	89	4210	89	3830	89	3470	89	3140	95 108	5	90	5560	90	4220	90	3840	90	3490	90	3160	95 109		
10	89	5660	89	4290	89	3900	89	3540	89	3200	95 108	10	90	5660	90	4300	90	3910	90	3550	90	3220	95 109		
15	88	5570	88	4220	88	3840	88	3480	88	3150	93 106	15	88	5570	88	4230	88	3850	88	3490	88	3160	93 107		
20	86	5440	86	4120	86	3740	86	3390	86	3070	93 105	20	86	5430	86	4120	86	3750	86	3400	86	3080	91 104		
25	84	5280	84	4000	84	3630	84	3290	84	2970	93 105	25	84	5270	84	4000	84	3630	84	3300	84	2980	91 103		
30	82	5110	82	3870	82	3510	82	3180	82	2870	92 104	30	82	5090	82	3860	82	3510	82	3180	82	2870	90 103		
35	79	4950	79	3730	79	3390	79	3060	79	2760	92 104	35	80	4920	80	3730	80	3380	80	3060	80	2760	90 102		
40	77	4780	77	3600	77	3260	77	2950	78	2710	92 103	40	77	4750	77	3590	77	3260	77	2940	77	2650	90 101		
45	75	4620	76	3570	77	3330	78	3100	79	2870	92 103	45	75	4590	75	3460	75	3130	75	2870	76	2660	90 101		
50	74	4630	77	3800	78	3540	79	3300	80	3060	92 103	50	73	4430	75	3520	76	3280	77	3050	78	2830	90 101		

WEIGHT = 11500 LBS										VENR = 162 KIAS				WEIGHT = 11000 LBS										VENR = 162 KIAS			
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2				
	10 KTS		WIND		10 KTS		20 KTS		30 KTS				10 KTS		WIND		10 KTS		20 KTS		30 KTS						
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	
-25	91	4990	91	3780	91	3440	91	3110	91	2810	96	110	-25	91	5020	91	3810	91	3470	91	3150	91	2850	97	111		
-20	90	5090	90	3860	90	3500	90	3180	90	2870	96	110	-20	91	5110	91	3890	91	3540	91	3210	91	2900	97	111		
-15	90	5180	90	3930	90	3570	90	3240	90	2930	96	110	-15	91	5200	91	3960	91	3610	91	3270	91	2970	97	111		
-10	90	5280	90	4010	90	3650	90	3310	90	3000	96	110	-10	91	5300	91	4040	91	3680	91	3340	91	3030	97	111		
-5	90	5380	90	4090	90	3720	90	3380	90	3060	96	110	-5	91	5400	91	4120	91	3750	91	3410	91	3090	97	111		
0	90	5480	90	4170	90	3800	90	3450	90	3130	96	110	0	91	5500	91	4200	91	3830	91	3480	91	3160	97	111		
5	90	5570	90	4240	90	3860	90	3510	90	3180	96	110	5	90	5590	90	4270	90	3900	90	3540	90	3220	97	111		
10	90	5670	90	4320	90	3930	90	3580	90	3240	96	110	10	90	5690	90	4350	90	3960	90	3610	90	3280	97	111		
15	88	5570	88	4240	88	3870	88	3510	88	3190	94	108	15	89	5590	89	4270	89	3890	89	3540	89	3210	95	109		
20	87	5430	87	4130	87	3760	87	3420	87	3100	92	105	20	87	5440	87	4150	87	3780	87	3440	87	3120	92	106		
25	84	5260	84	4000	84	3640	84	3310	84	2990	89	102	25	85	5260	85	4020	85	3660	85	3330	85	3010	90	103		
30	82	5080	82	3860	82	3510	82	3190	82	2880	88	101	30	83	5080	83	3870	83	3520	83	3200	83	2900	87	100		
35	80	4910	80	3720	80	3380	80	3070	80	2770	88	101	35	80	4900	80	3730	80	3390	80	3070	80	2780	86	99		
40	78	4730	78	3580	78	3250	78	2940	78	2660	88	100	40	78	4720	78	3580	78	3250	78	2950	78	2670	86	98		
45	75	4560	75	3450	75	3120	75	2820	75	2560	88	99	45	75	4540	75	3440	75	3120	75	2820	75	2570	86	98		
50	73	4400	73	3320	73	3030	73	2740	73	2500	88	99	50	73	4380	73	3310	73	3000	73	2720	73	2470	86	97		

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 3000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 167 KIAS										WEIGHT = 16000 LBS										VENR = 167 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S																					
					10 KTS		20 KTS		30 KTS		10 KTS							20 KTS		30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	VR	V2														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-30	88	5250	88	3880	88	3490	88	3140	89	2910	107	117	-30	88	5230	88	3870	88	3490	88	3140	88	2820	106	116														
-25	88	5360	88	3960	88	3570	88	3210	89	2970	107	117	-25	88	5330	88	3950	88	3560	88	3210	88	2880	106	116														
-20	88	5470	88	4050	88	3650	88	3290	89	3040	107	117	-20	88	5450	88	4030	88	3640	88	3280	88	2950	106	116														
-15	88	5590	88	4140	88	3730	88	3360	89	3100	107	117	-15	88	5560	88	4120	88	3720	88	3350	88	3020	106	116														
-10	88	5710	88	4220	88	3810	88	3440	89	3170	107	117	-10	88	5680	88	4210	88	3800	88	3430	88	3080	106	116														
-5	88	5830	88	4310	88	3890	88	3510	89	3230	107	117	-5	88	5800	88	4300	88	3880	88	3500	88	3150	106	116														
0	88	5920	88	4380	88	3960	88	3570	89	3310	107	117	0	88	5890	88	4370	88	3950	88	3560	88	3210	106	116														
5	87	5970	87	4430	87	4000	87	3650	89	3400	107	117	5	87	5940	87	4410	87	3990	87	3600	88	3280	106	116														
10	86	5990	86	4440	86	4030	88	3770	89	3510	107	117	10	86	5960	86	4420	86	4000	87	3630	88	3380	105	116														
15	84	5860	86	4540	88	4250	89	3970	90	3700	107	116	15	84	5820	85	4370	86	4090	88	3820	89	3570	105	115														
20	83	5770	87	4790	89	4480	90	4180	91	3900	106	116	20	83	5690	86	4610	87	4320	89	4040	90	3760	105	115														
25	84	6110	88	5060	90	4740	91	4430	92	4130	106	116	25	83	5890	87	4880	89	4570	90	4270	91	3980	105	115														
30	86	6490	90	5380	91	5030	92	4700	93	4390	106	116	30	84	6250	89	5180	90	4840	91	4530	92	4220	105	115														
35	87	6900	91	5720	92	5350	93	5000	95	4670	106	116	35	86	6640	90	5500	91	5150	92	4810	93	4490	105	115														
40	88	7370	92	6100	94	5710	95	5340	96	4980	106	116	40	87	7090	91	5870	92	5490	93	5130	94	4780	105	115														
45	90	7890	94	6530	95	6110	96	5710	97	5330	106	116	45	89	7580	93	6270	94	5870	95	5480	96	5110	105	115														
48	91	8240	95	6810	96	6370	97	5950	98	5550	106	116	48	90	7910	93	6540	94	6120	95	5720	96	5330	105	115														

WEIGHT = 15500 LBS									VENR = 166 KIAS									WEIGHT = 15000 LBS									VENR = 165 KIAS								
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S																	
	10 KTS		WIND		10 KTS		20 KTS		30 KTS		10 KTS			WIND		10 KTS		20 KTS		30 KTS															
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-30	89	5190	89	3850	89	3480	89	3130	89	2810	104	114	-30	89	5160	89	3840	89	3470	89	3120	89	2810	102	113										
-25	88	5300	88	3930	88	3550	88	3200	88	2870	104	114	-25	89	5270	89	3920	89	3540	89	3190	89	2870	102	113										
-20	88	5410	88	4020	88	3630	88	3270	88	2940	104	114	-20	89	5380	89	4000	89	3620	89	3260	89	2940	102	113										
-15	88	5520	88	4100	88	3710	88	3340	88	3010	104	114	-15	88	5490	88	4090	88	3700	88	3340	88	3000	102	113										
-10	88	5640	88	4190	88	3790	88	3420	88	3080	104	114	-10	88	5600	88	4170	88	3780	88	3410	88	3070	102	113										
-5	88	5750	88	4280	88	3870	88	3490	88	3140	104	114	-5	88	5710	88	4260	88	3860	88	3480	88	3140	102	113										
0	88	5840	88	4350	88	3930	88	3550	88	3200	104	114	0	88	5800	88	4330	88	3920	88	3540	88	3190	102	113										
5	87	5890	87	4390	87	3970	87	3580	87	3230	104	114	5	88	5850	88	4370	88	3950	88	3570	88	3220	102	113										
10	87	5910	87	4400	87	3980	87	3590	87	3240	104	114	10	87	5860	87	4380	87	3960	87	3580	87	3230	102	112										
15	85	5770	85	4300	85	3890	86	3590	87	3340	104	114	15	85	5720	85	4280	85	3870	85	3500	85	3150	102	112										
20	83	5640	84	4330	85	4050	87	3780	88	3530	104	114	20	83	5590	83	4180	83	3800	84	3550	86	3300	102	112										
25	81	5530	85	4580	87	4290	88	4010	89	3730	104	114	25	81	5440	83	4290	84	4020	86	3750	87	3490	102	112										
30	82	5870	87	4850	88	4540	89	4240	90	3950	104	114	30	80	5500	84	4550	86	4250	87	3970	88	3700	102	112										
35	84	6230	88	5160	89	4830	90	4510	91	4200	104	114	35	82	5830	86	4830	87	4520	88	4220	89	3930	102	112										
40	85	6640	89	5490	90	5140	91	4800	92	4470	104	114	40	83	6210	87	5140	88	4800	89	4490	90	4180	102	112										
45	87	7090	90	5860	92	5490	93	5130	94	4780	104	114	45	85	6630	88	5480	89	5120	90	4780	91	4460	102	112										
48	88	7390	91	6110	92	5720	93	5340	94	4980	104	114	48	86	6900	89	5700	90	5330	91	4980	92	4640	102	112										

WEIGHT = 14500 LBS										VENR = 165 KIAS				WEIGHT = 14000 LBS										VENR = 164 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR	V2						
	10 KTS				10 KTS		20 KTS					30 KTS		10 KTS				10 KTS				20 KTS		30 KTS			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT							
-30	89	5140	89	3830	89	3460	89	3120	89	2810	100	112	-30	89	5120	89	3830	89	3460	89	3120	89	2810	98	110		
-25	89	5240	89	3910	89	3540	89	3190	89	2870	100	112	-25	89	5220	89	3900	89	3530	89	3190	89	2870	98	110		
-20	89	5350	89	3990	89	3610	89	3260	89	2940	100	112	-20	89	5320	89	3990	89	3610	89	3260	89	2940	98	110		
-15	89	5460	89	4080	89	3690	89	3330	89	3000	100	112	-15	89	5430	89	4070	89	3690	89	3330	89	3000	98	110		
-10	89	5570	89	4160	89	3770	89	3410	89	3070	100	112	-10	89	5540	89	4150	89	3760	89	3400	89	3070	98	110		
-5	89	5680	89	4250	89	3850	89	3480	89	3140	100	112	-5	89	5650	89	4240	89	3840	89	3480	89	3140	98	110		
0	88	5760	88	4310	88	3910	88	3530	88	3190	100	112	0	89	5730	89	4300	89	3900	89	3530	89	3190	98	110		
5	88	5810	88	4350	88	3940	88	3560	88	3220	100	111	5	88	5780	88	4340	88	3930	88	3560	88	3220	98	110		
10	87	5820	87	4360	87	3950	87	3570	87	3230	100	111	10	87	5780	87	4340	87	3940	87	3570	87	3220	98	110		
15	85	5680	85	4260	85	3860	85	3490	85	3150	100	111	15	85	5640	85	4240	85	3840	85	3480	85	3140	98	109		
20	83	5540	83	4150	83	3760	83	3400	83	3090	100	110	20	83	5500	83	4130	83	3750	83	3390	83	3060	98	109		
25	81	5390	81	4040	82	3760	83	3510	85	3260	100	110	25	81	5350	81	4020	81	3640	81	3290	82	3050	98	109		
30	79	5240	82	4260	83	3980	85	3720	86	3460	100	110	30	79	5190	80	3980	81	3720	82	3470	83	3220	98	109		
35	80	5460	83	4510	85	4220	86	3940	87	3670	100	110	35	77	5100	81	4220	82	3940	84	3680	85	3420	98	109		
40	81	5810	85	4800	86	4490	87	4190	88	3900	100	110	40	79	5430	83	4480	84	4180	85	3900	86	3630	98	108		
45	83	6190	86	5110	87	4780	88	4460	89	4150	100	110	45	80	5770	84	4770	85	4450	86	4150	87	3870	98	108		
48	84	6440	87	5320	88	4970	89	4640	90	4320	100	110	48	81	6000	85	4950	86	4630	87	4320	88	4020	98	108		

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
3000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 164 KIAS								WEIGHT = 13000 LBS								VENR = 163 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS								
	10 KTS				10 KTS				20 KTS						30 KTS				10 KTS					20 KTS				30 KTS			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	
-30	89	5100	89	3820	89	3460	89	3130	89	2820	97	109	-30	90	5090	90	3830	90	3470	90	3140	90	2830	95	108	-30	89	5100	89	3820	
-25	89	5200	89	3900	89	3530	89	3190	89	2880	97	109	-25	90	5190	90	3910	90	3540	90	3200	90	2890	95	108	-25	89	5200	89	3900	
-20	89	5300	89	3980	89	3610	89	3260	89	2940	97	109	-20	90	5290	90	3990	90	3620	90	3270	90	2950	95	108	-20	89	5300	89	3980	
-15	89	5410	89	4070	89	3690	89	3340	89	3010	97	109	-15	90	5400	90	4070	90	3690	90	3340	90	3020	95	108	-15	89	5410	89	4070	
-10	89	5520	89	4150	89	3760	89	3410	89	3080	97	109	-10	89	5500	89	4150	89	3770	89	3410	89	3090	95	108	-10	89	5520	89	4150	
-5	89	5630	89	4230	89	3840	89	3480	89	3140	97	109	-5	89	5610	89	4230	89	3840	89	3480	89	3150	95	108	-5	89	5630	89	4230	
0	89	5710	89	4300	89	3900	89	3530	89	3190	97	109	0	89	5690	89	4300	89	3900	89	3540	89	3200	95	108	0	89	5710	89	4300	
5	88	5750	88	4330	88	3930	88	3560	88	3220	97	109	5	89	5730	89	4330	89	3930	89	3570	89	3230	95	107	5	88	5750	88	4330	
10	87	5750	87	4340	87	3940	87	3570	87	3220	97	109	10	88	5730	88	4330	88	3940	88	3570	88	3230	95	107	10	87	5750	87	4340	
15	86	5610	86	4230	86	3840	86	3470	86	3140	96	108	15	86	5580	86	4220	86	3830	86	3470	86	3140	95	107	15	86	5610	86	4230	
20	84	5470	84	4120	84	3740	84	3380	84	3050	96	108	20	84	5440	84	4110	84	3730	84	3380	84	3050	94	106	20	84	5470	84	4120	
25	81	5310	81	4000	81	3630	81	3280	81	2960	96	107	25	82	5280	82	3980	82	3620	82	3270	82	2960	94	106	25	81	5310	81	4000	
30	79	5150	79	3880	79	3510	80	3230	81	3000	96	107	30	79	5120	79	3860	79	3500	79	3170	79	2860	94	105	30	79	5150	79	3880	
35	77	5000	79	3930	80	3670	81	3420	82	3180	96	107	35	77	4960	77	3740	78	3420	79	3180	80	2950	94	105	35	77	5000	79	3930	
40	77	5060	80	4170	81	3900	82	3640	84	3380	96	107	40	75	4810	78	3880	79	3620	80	3380	81	3140	94	105	40	77	5060	80	4170	
45	78	5390	82	4440	83	4140	84	3860	85	3590	96	107	45	76	5010	79	4130	80	3860	81	3590	82	3330	94	105	45	78	5390	82	4440	
48	79	5590	82	4610	84	4310	85	4010	85	3730	96	107	48	77	5200	80	4280	81	4000	82	3720	83	3460	94	105	48	79	5590	82	4610	

WEIGHT = 12500 LBS										VENR = 162 KIAS				WEIGHT = 12000 LBS										VENR = 161 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2				
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT
-30	90	5090	90	3840	90	3480	90	3150	90	2840	95 108	-30	90	5100	90	3850	90	3500	90	3170	90	2860	96 109				
-25	90	5190	90	3910	90	3550	90	3220	90	2900	95 108	-25	90	5190	90	3930	90	3570	90	3230	90	2920	96 109				
-20	90	5290	90	3990	90	3630	90	3290	90	2970	95 108	-20	90	5290	90	4010	90	3640	90	3300	90	2990	96 109				
-15	90	5390	90	4080	90	3700	90	3360	90	3030	95 108	-15	90	5400	90	4090	90	3720	90	3370	90	3050	96 109				
-10	90	5500	90	4160	90	3780	90	3430	90	3100	95 108	-10	90	5500	90	4170	90	3790	90	3440	90	3120	96 109				
-5	90	5600	90	4240	90	3850	90	3500	90	3160	95 108	-5	90	5600	90	4250	90	3870	90	3510	90	3180	96 109				
0	89	5680	89	4300	89	3910	89	3550	89	3210	95 108	0	90	5680	90	4310	90	3930	90	3570	90	3230	95 109				
5	89	5720	89	4330	89	3940	89	3570	89	3240	94 107	5	89	5710	89	4340	89	3950	89	3590	89	3250	95 108				
10	88	5720	88	4330	88	3940	88	3580	88	3240	93 106	10	88	5710	88	4340	88	3950	88	3590	88	3250	94 107				
15	86	5560	86	4220	86	3830	86	3480	86	3150	93 105	15	86	5550	86	4220	86	3840	86	3490	86	3160	91 105				
20	84	5420	84	4100	84	3730	84	3380	84	3060	93 105	20	84	5400	84	4100	84	3730	84	3390	84	3070	91 103				
25	82	5250	82	3970	82	3610	82	3270	82	2960	92 104	25	82	5230	82	3970	82	3610	82	3270	82	2960	91 103				
30	80	5090	80	3850	80	3490	80	3160	80	2850	92 104	30	80	5060	80	3840	80	3490	80	3160	80	2850	90 102				
35	77	4930	77	3720	77	3370	77	3050	77	2750	92 103	35	78	4900	78	3710	78	3370	78	3050	78	2750	90 102				
40	75	4770	75	3600	76	3360	77	3130	79	2900	92 103	40	75	4740	75	3580	75	3250	75	2940	76	2680	90 101				
45	73	4650	77	3830	78	3570	79	3320	80	3090	92 103	45	73	4580	74	3540	75	3300	76	3070	77	2850	90 101				
48	74	4830	78	3970	79	3710	80	3450	81	3200	92 103	48	72	4490	75	3680	76	3430	77	3190	78	2960	90 101				

WEIGHT = 11500 LBS										VENR = 161 KIAS										WEIGHT = 11000 LBS										VENR = 160 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-30	91	5110	91	3880	91	3520	91	3200	91	2890	96	110	-30	91	5140	91	3910	91	3560	91	3230	91	2920	97	112														
-25	91	5210	91	3950	91	3590	91	3260	91	2950	96	110	-25	91	5230	91	3980	91	3630	91	3290	91	2980	97	111														
-20	91	5310	91	4030	91	3670	91	3330	91	3010	96	110	-20	91	5330	91	4060	91	3700	91	3360	91	3050	97	111														
-15	90	5410	90	4110	90	3740	90	3400	90	3080	96	110	-15	91	5430	91	4140	91	3770	91	3430	91	3110	97	111														
-10	90	5510	90	4190	90	3820	90	3470	90	3140	96	110	-10	91	5530	91	4220	91	3850	91	3500	91	3180	97	111														
-5	90	5610	90	4270	90	3890	90	3540	90	3210	96	110	-5	91	5630	91	4310	91	3920	91	3570	91	3240	97	111														
0	90	5690	90	4330	90	3950	90	3590	90	3260	96	110	0	90	5710	90	4360	90	3980	90	3620	90	3290	97	111														
5	89	5720	89	4360	89	3970	89	3610	89	3280	95	109	5	90	5740	90	4390	90	4000	90	3640	90	3310	96	110														
10	89	5710	89	4360	89	3970	89	3610	89	3280	94	108	10	89	5730	89	4380	89	4000	89	3640	89	3310	95	109														
15	87	5550	87	4230	87	3850	87	3500	87	3180	92	106	15	87	5560	87	4250	87	3880	87	3530	87	3200	93	107														
20	85	5390	85	4110	85	3740	85	3400	85	3080	90	103	20	85	5400	85	4120	85	3760	85	3420	85	3100	90	104														
25	82	5220	82	3970	82	3610	82	3280	82	2970	88	101	25	83	5210	83	3980	83	3620	83	3290	83	2980	88	101														
30	80	5050	80	3840	80	3490	80	3160	80	2860	88	101	30	81	5040	81	3840	81	3490	81	3170	81	2870	86	99														
35	78	4880	78	3700	78	3360	78	3050	78	2750	88	100	35	78	4860	78	3700	78	3360	78	3050	78	2760	86	99														
40	76	4710	76	3570	76	3240	76	2930	76	2650	88	100	40	76	4690	76	3560	76	3240	76	2930	76	2660	86	98														
45	73	4550	73	3440	73	3120	74	2830	74	2630	88	99	45	74	4530	74	3430	74	3110	74	2810	74	2560	86	97														
48	72	4460	72	3390	73	3160	74	2940	75	2720	88	99	48	72	4430	72	3350	72	3040	72	2750	72	2510	86	97														



Figure 7-2 (Sheet 8 of 30)

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
4000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS									
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2	10 KTS	V1 DIST		V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	VR V2								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS		FT	KIAS	FT	KIAS	FT		KIAS	FT						
-30	88	5500	88	4060	88	3670	88	3300	89	3010	107	117	-30	89	5470	89	4050	89	3660	89	3290	89	2960	106	116
-25	88	5610	88	4150	88	3750	88	3370	89	3080	107	117	-25	88	5590	88	4140	88	3740	88	3370	88	3030	106	116
-20	88	5740	88	4250	88	3890	88	3450	89	3140	107	117	-20	88	5710	88	4230	88	3820	88	3450	88	3100	106	116
-15	88	5860	88	4340	88	3920	88	3530	88	3210	107	117	-15	88	5830	88	4330	88	3910	88	3530	88	3170	106	116
-10	88	5980	88	4430	88	4000	88	3610	88	3280	107	117	-10	88	5950	88	4420	88	3990	88	3600	88	3240	106	116
-5	88	6100	88	4520	88	4090	88	3690	88	3340	107	117	-5	88	6070	88	4510	88	4070	88	3680	88	3310	106	116
0	87	6120	87	4540	87	4100	87	3710	89	3460	107	117	0	87	6090	87	4520	87	4090	87	3690	87	3330	106	116
5	86	6120	86	4530	86	4110	88	3840	89	3580	107	117	5	86	6080	86	4520	86	4080	86	3700	88	3450	105	116
10	85	6020	86	4600	87	4310	89	4030	90	3760	107	116	10	85	5990	85	4450	86	4150	87	3880	89	3620	105	116
15	83	5870	87	4860	88	4560	90	4250	91	3970	106	116	15	83	5840	86	4680	87	4390	88	4100	90	3830	105	115
20	84	6200	88	5140	89	4820	91	4500	92	4200	106	116	20	83	5970	87	4950	88	4640	90	4340	91	4050	105	115
25	85	6570	89	5450	91	5110	92	4780	93	4460	106	116	25	84	6330	88	5250	89	4920	91	4600	92	4290	105	115
30	86	6980	91	5800	92	5430	93	5080	94	4740	106	116	30	85	6720	89	5580	91	5220	92	4880	93	4560	105	115
35	88	7440	92	6170	93	5780	94	5400	95	5040	106	116	35	87	7150	91	5930	92	5560	93	5190	94	4850	105	115
40	89	7950	93	6590	94	6170	95	5770	96	5380	106	116	40	88	7640	92	6330	93	5930	94	5540	95	5170	105	115
45	91	8520	94	7060	96	6610	97	6180	98	5760	106	116	45	90	8180	93	6780	94	6340	95	5930	96	5530	105	115
46	91	8650	95	7160	96	6700	97	6270	98	5850	106	116	46	90	8300	94	6870	95	6430	96	6010	97	5610	105	115

WEIGHT = 15500 LBS										VENR = 165 KIAS										WEIGHT = 15000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	V1 DIST	V1 DIST	V1 DIST			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	V1 DIST	V1 DIST	V1 DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-30	89	5430	89	4040	89	3650	89	3290	89	2950	104	114	-30	89	5400	89	4020	89	3640	89	3280	89	2950	102	113														
-25	89	5550	89	4120	89	3720	89	3360	89	3020	104	114	-25	89	5510	89	4110	89	3710	89	3350	89	3020	102	113														
-20	89	5670	89	4210	89	3810	89	3440	89	3090	104	114	-20	89	5630	89	4200	89	3800	89	3430	89	3090	102	113														
-15	88	5790	88	4310	88	3890	88	3520	88	3170	104	114	-15	89	5750	89	4290	89	3880	89	3510	89	3160	102	113														
-10	88	5910	88	4390	88	3970	88	3590	88	3230	104	114	-10	89	5860	89	4380	89	3960	89	3580	89	3230	102	113														
-5	88	6020	88	4480	88	4060	88	3660	88	3300	104	114	-5	88	5980	88	4460	88	4040	88	3650	88	3300	102	113														
0	87	6040	87	4500	87	4070	87	3680	87	3320	104	114	0	88	5990	88	4480	88	4050	88	3670	88	3310	102	113														
5	86	6030	86	4490	86	4060	86	3670	86	3310	104	114	5	87	5980	87	4470	87	4050	87	3660	87	3300	102	113														
10	85	5930	85	4420	85	4000	85	3640	86	3400	104	114	10	85	5880	85	4400	85	3980	85	3600	85	3250	102	112														
15	83	5780	84	4400	85	4120	86	3850	88	3590	104	114	15	83	5730	83	4280	83	3880	84	3600	85	3360	102	112														
20	81	5630	85	4650	86	4360	88	4070	89	3790	104	114	20	81	5580	83	4360	84	4080	85	3810	87	3550	102	112														
25	82	5940	86	4920	87	4610	89	4310	90	4020	104	114	25	80	5570	84	4620	85	4320	86	4030	88	3760	102	112														
30	83	6300	87	5220	89	4890	90	4570	91	4260	104	114	30	81	5910	85	4890	86	4580	88	4280	89	3990	102	112														
35	85	6700	89	5550	90	5200	91	4860	92	4530	104	114	35	83	6270	87	5190	88	4860	89	4540	90	4230	102	112														
40	86	7140	90	5920	91	5540	92	5180	93	4830	104	114	40	84	6670	88	5530	89	5170	90	4830	91	4510	102	112														
45	88	7640	91	6330	92	5920	93	5530	94	5160	104	114	45	86	7130	89	5900	90	5520	91	5160	92	4810	102	112														
46	88	7750	92	6410	93	6000	94	5610	95	5230	104	114	46	86	7230	89	5980	90	5600	91	5230	92	4880	102	112														

WEIGHT = 14500 LBS										VENR = 163 KIAS										WEIGHT = 14000 LBS										VENR = 163 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST			30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
4000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C		TAILWIND 10 KTS		ZERO WIND		HEADWINDS		VR V2 KIAS	TEMP DEG C		TAILWIND 10 KTS		ZERO WIND		HEADWINDS		VR V2 KIAS								
C	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	C		V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT									
-30	90	5330	90	4000	90	3630	90	3280	90	2960	97	109	-30	90	5320	90	4010	90	3630	90	3290	90	2970	95	108
-25	90	5440	90	4090	90	3700	90	3350	90	3020	97	109	-25	90	5420	90	4090	90	3710	90	3360	90	3030	95	108
-20	89	5550	89	4170	89	3790	89	3430	89	3090	97	109	-20	90	5540	90	4180	90	3790	90	3430	90	3100	95	108
-15	89	5660	89	4260	89	3870	89	3500	89	3170	97	109	-15	90	5650	90	4260	90	3870	90	3510	90	3170	95	108
-10	89	5770	89	4350	89	3940	89	3570	89	3230	97	109	-10	90	5750	90	4350	90	3950	90	3580	90	3240	95	108
-5	89	5880	89	4430	89	4020	89	3650	89	3300	97	109	-5	89	5860	89	4430	89	4030	89	3650	89	3310	95	108
0	88	5890	88	4440	88	4030	88	3650	88	3300	97	109	0	89	5860	89	4430	89	4030	89	3660	89	3310	95	107
5	87	5870	87	4420	87	4020	87	3640	87	3290	97	109	5	88	5840	88	4420	88	4010	88	3640	88	3300	95	107
10	86	5760	86	4350	86	3950	86	3580	86	3230	96	108	10	86	5730	86	4340	86	3940	86	3570	86	3230	95	107
15	84	5600	84	4220	84	3830	84	3470	84	3140	96	108	15	84	5570	84	4210	84	3830	84	3470	84	3140	95	106
20	82	5450	82	4100	82	3720	82	3370	82	3040	96	107	20	82	5410	82	4090	82	3710	82	3360	82	3040	94	106
25	80	5290	80	3990	80	3620	80	3280	81	3050	96	107	25	80	5250	80	3970	80	3600	80	3260	80	2940	94	105
30	77	5140	78	3980	80	3720	81	3470	82	3230	96	107	30	78	5100	78	3850	78	3490	78	3220	79	3000	94	105
35	76	5100	80	4220	81	3940	82	3680	83	3430	96	107	35	75	4950	77	3920	79	3660	80	3410	81	3180	94	105
40	78	5420	81	4470	82	4180	83	3900	84	3630	96	107	40	75	5040	79	4160	80	3890	81	3630	82	3370	94	105
45	79	5770	82	4760	84	4450	84	4150	85	3870	96	107	45	77	5370	80	4420	81	4130	82	3850	83	3580	94	105
46	79	5840	83	4830	84	4510	85	4210	86	3920	96	107	46	77	5430	80	4480	81	4190	82	3900	83	3630	94	105

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS									
TEMP		TAILWIND		ZERO		HEADWINDS		VR V2	TEMP		TAILWIND		ZERO		HEADWINDS		VR V2
DEG C	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS	DEG C	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT	VR V2 KIAS							
-30	90 5320	90 4020	90 3650	90 3300	90 2990	96 109	-30	91 5320	91 4030	91 3660	91 3320	91 3010	96 110				
-25	90 5420	90 4100	90 3720	90 3370	90 3050	96 109	-25	90 5420	90 4110	90 3740	90 3390	90 3070	96 110				
-20	90 5530	90 4180	90 3800	90 3450	90 3120	96 109	-20	90 5530	90 4200	90 3820	90 3470	90 3140	96 110				
-15	90 5640	90 4270	90 3880	90 3520	90 3190	96 109	-15	90 5640	90 4280	90 3900	90 3540	90 3210	96 110				
-10	90 5740	90 4350	90 3960	90 3590	90 3250	95 109	-10	90 5740	90 4370	90 3970	90 3610	90 3270	96 110				
-5	90 5850	90 4430	90 4030	90 3660	90 3320	95 109	-5	90 5850	90 4450	90 4050	90 3680	90 3340	96 110				
0	89 5850	89 4440	89 4040	89 3670	89 3320	94 108	0	89 5850	89 4450	89 4050	89 3680	89 3340	95 109				
5	88 5820	88 4420	88 4020	88 3650	88 3310	93 106	5	88 5820	88 4430	88 4030	88 3660	88 3320	94 107				
10	86 5710	86 4330	86 3940	86 3580	86 3240	93 105	10	87 5700	87 4340	87 3950	87 3590	87 3250	92 105				
15	84 5550	84 4210	84 3820	84 3470	84 3140	93 105	15	84 5530	84 4210	84 3830	84 3480	84 3150	91 103				
20	82 5380	82 4080	82 3710	82 3360	82 3040	92 104	20	82 5360	82 4080	82 3710	82 3360	82 3040	91 103				
25	80 5220	80 3960	80 3590	80 3250	80 2940	92 104	25	80 5200	80 3950	80 3590	80 3250	80 2940	90 102				
30	78 5070	78 3830	78 3480	78 3150	78 2840	92 103	30	78 5040	78 3820	78 3470	78 3140	78 2840	90 102				
35	76 4920	76 3710	76 3400	77 3160	78 2940	92 103	35	76 4880	76 3700	76 3360	76 3040	76 2740	90 101				
40	73 4770	76 3860	77 3600	78 3360	79 3120	92 103	40	74 4730	74 3580	75 3330	76 3100	77 2880	90 101				
45	74 4980	78 4110	79 3830	80 3570	81 3320	92 103	45	72 4610	75 3800	76 3540	77 3300	78 3060	90 101				
46	75 5040	78 4160	79 3880	80 3610	81 3360	92 103	46	72 4670	75 3840	76 3590	77 3340	78 3100	90 101				

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS									
TEMP		TAILWIND		ZERO		HEADWINDS		VR V2	TEMP		TAILWIND		ZERO		HEADWINDS		VR V2
DEG C	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR V2 KIAS	DEG C	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT		30 KTS V1 DIST KIAS FT	VR V2 KIAS							
-30	91 5340	91 4060	91 3690	91 3350	91 3030	97 111	-30	91 5360	91 4090	91 3720	91 3380	91 3070	98 112				
-25	91 5440	91 4130	91 3760	91 3420	91 3100	97 111	-25	91 5460	91 4170	91 3800	91 3450	91 3130	98 112				
-20	91 5540	91 4220	91 3840	91 3490	91 3160	97 111	-20	91 5570	91 4250	91 3880	91 3530	91 3200	98 112				
-15	91 5650	91 4310	91 3920	91 3570	91 3230	97 111	-15	91 5670	91 4340	91 3960	91 3600	91 3270	98 112				
-10	91 5750	91 4390	91 4000	91 3640	91 3300	97 111	-10	91 5780	91 4420	91 4030	91 3670	91 3330	98 112				
-5	90 5860	90 4470	90 4070	90 3710	90 3360	97 111	-5	91 5880	91 4500	91 4100	91 3740	91 3400	98 112				
0	90 5850	90 4470	90 4070	90 3700	90 3360	96 110	0	90 5870	90 4490	90 4100	90 3730	90 3390	97 111				
5	89 5820	89 4440	89 4050	89 3680	89 3340	95 108	5	89 5830	89 4470	89 4070	89 3710	89 3370	95 109				
10	87 5700	87 4350	87 3960	87 3600	87 3270	92 106	10	87 5710	87 4370	87 3990	87 3630	87 3300	93 107				
15	85 5520	85 4210	85 3840	85 3490	85 3160	90 103	15	85 5520	85 4230	85 3850	85 3510	85 3180	90 104				
20	83 5350	83 4080	83 3710	83 3370	83 3050	88 101	20	83 5340	83 4090	83 3720	83 3380	83 3070	88 101				
25	80 5180	80 3940	80 3590	80 3260	80 2950	88 101	25	81 5170	81 3950	81 3590	81 3260	81 2960	86 99				
30	78 5010	78 3810	78 3470	78 3140	78 2840	88 100	30	79 5000	79 3810	79 3470	79 3150	79 2850	86 99				
35	76 4860	76 3690	76 3350	76 3030	76 2740	88 100	35	76 4840	76 3680	76 3350	76 3030	76 2750	86 98				
40	74 4700	74 3560	74 3230	74 2920	74 2660	88 99	40	74 4670	74 3550	74 3220	74 2920	74 2650	86 98				
45	72 4550	72 3500	73 3270	74 3040	75 2820	88 99	45	72 4520	72 3420	72 3100	72 2810	72 2590	86 97				
46	71 4520	73 3550	74 3310	75 3070	76 2850	88 99	46	71 4480	71 3400	71 3080	72 2820	73 2620	86 97				



Figure 7-2 (Sheet 10 of 30)

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 5000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 165 KIAS										VENR = 164 KIAS															
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS												
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS										
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2			C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				KIAS	FT	KIAS	FT	KIAS	FT	KIAS								
-35	89	5680	89	4200	89	3790	89	3410	89	3070	107	117	-35	89	5650	89	4190	89	3780	89	3410	89	3060	106	116
-30	89	5800	89	4290	89	3870	89	3490	89	3140	107	117	-30	89	5770	89	4280	89	3860	89	3480	89	3130	106	116
-25	89	5910	89	4380	89	3950	89	3570	89	3210	107	117	-25	89	5890	89	4360	89	3940	89	3560	89	3200	106	116
-20	89	6030	89	4470	89	4040	89	3640	89	3280	107	117	-20	89	6000	89	4450	89	4030	89	3630	89	3270	106	116
-15	88	6120	88	4540	88	4100	88	3700	88	3330	107	117	-15	88	6090	88	4520	88	4090	88	3690	88	3320	106	116
-10	88	6170	88	4570	88	4130	88	3730	88	3430	107	117	-10	88	6140	88	4560	88	4120	88	3720	88	3350	106	116
-5	87	6200	87	4600	87	4150	87	3800	89	3550	107	117	-5	87	6160	87	4580	87	4140	87	3740	87	3420	106	116
0	86	6170	86	4580	86	4230	88	3960	89	3690	107	117	0	86	6140	86	4560	86	4120	87	3810	88	3560	105	116
5	84	6140	86	4630	87	4400	88	4120	90	3840	107	116	5	85	6100	85	4540	86	4240	87	3960	88	3700	105	116
10	83	6000	87	4950	88	4650	89	4340	91	4050	106	116	10	83	5970	86	4770	87	4470	88	4180	90	3910	105	115
15	83	6290	88	5230	89	4900	90	4590	92	4280	106	116	15	82	6060	87	5040	88	4720	89	4420	90	4120	105	115
20	85	6660	89	5540	90	5190	92	4860	93	4540	106	116	20	84	6410	88	5330	89	5000	90	4670	92	4360	105	115
25	86	7070	90	5880	91	5510	93	5150	94	4810	106	116	25	85	6800	89	5650	90	5300	91	4960	93	4630	105	115
30	87	7520	91	6250	93	5860	94	5480	95	5120	106	116	30	86	7230	90	6010	91	5630	93	5270	94	4920	105	115
35	89	8030	93	6660	94	6240	95	5840	96	5460	106	116	35	88	7710	91	6400	93	6000	94	5610	95	5240	105	115
40	90	8590	94	7130	95	6680	96	6250	97	5830	106	116	40	89	8240	93	6840	94	6410	95	5990	96	5600	105	115
42	91	8830	94	7320	96	6860	97	6420	97	6000	106	116	42	90	8720	94	7230	95	6770	96	6330	97	5910	105	115
44	91	9090	95	7530	96	7060	97	6600	98	6170	106	116													

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 164 KIAS										VENR = 163 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2	C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	89	5610	89	4170	89	3770	89	3400	89	3060	104	114							
-30	89	5730	89	4260	89	3850	89	3470	89	3130	104	114							
-25	89	5840	89	4340	89	3930	89	3550	89	3200	104	114							
-20	89	5960	89	4430	89	4010	89	3620	89	3260	104	114							
-15	88	6040	88	4500	88	4070	88	3680	88	3310	104	114							
-10	88	6090	88	4530	88	4100	88	3710	88	3340	104	114							
-5	87	6110	87	4550	87	4120	87	3720	87	3360	104	114							
0	86	6080	86	4530	86	4100	86	3710	86	3340	104	114							
5	85	6040	85	4510	85	4080	85	3720	86	3470	104	114							
10	83	5910	83	4480	85	4200	86	3920	87	3660	104	114							
15	81	5770	85	4730	86	4430	87	4150	88	3860	104	114							
20	82	6020	86	5000	87	4680	88	4380	89	4090	104	114							
25	83	6380	87	5300	88	4960	89	4640	91	4330	104	114							
30	84	6770	88	5620	89	5270	91	4930	92	4600	104	114							
35	86	7210	89	5980	91	5610	92	5240	93	4890	104	114							
40	87	7700	91	6390	92	5980	93	5590	94	5220	104	114							
44	88	8140	92	6740	93	6320	94	5910	95	5510	104	114							

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS															
VENR = 162 KIAS										VENR = 162 KIAS															
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS												
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS										
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2			C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR	V2								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS						
-35	90	5550	90	4140	90	3750	90	3390	90	3060	100	112	-35	90	5520	90	4140	90	3750	90	3390	90	3060	98	111
-30	90	5660	90	4230	90	3830	90	3460	90	3120	100	112	-30	90	5630	90	4220	90	3830	90	3460	90	3120	98	111
-25	89	5770	89	4320	89	3910	89	3530	89	3190	100	112	-25	90	5740	90	4310	90	3900	90	3530	90	3190	98	111
-20	89	5880	89	4400	89	3990	89	3610	89	3260	100	112	-20	90	5850	90	4390	90	3980	90	3610	90	3260	98	110
-15	89	5960	89	4460	89	4040	89	3660	89	3310	100	112	-15	89	5930	89	4450	89	4040	89	3660	89	3310	98	110
-10	88	6000	88	4490	88	4070	88	3690	88	3330	100	112	-10	88	5960	88	4480	88	4060	88	3680	88	3330	98	110
-5	87	6020	87	4510	87	4090	87	3700	87	3340	100	111	-5	88	5980	88	4500	88	4080	88	3700	88	3340	98	110
0	86	5980	86	4490	86	4070	86	3680	86	3330	100	111	0	87	5940	87	4470	87	4060	87	3670	87	3320	98	110
5	85	5940	85	4460	85	4040	85	3660	85	3310	100	111	5	85	5900	85	4440	85	4030	85	3650	85	3300	98	109
10	83	5800	83	4350	83	3950	83	3570	83	3220	100	110	10	83	5760	83	4330	83	3930	83	3560	83	3220	98	109
15	81	5660	81	4250	82	3890	83	3630	84	3380	100	110	15	81	5620	81	4230	81	3830	81	3470	82	3160	98	109
20	79	5520	82	4380	83	4100	84	3830	85	3580	100	110	20	79	5470	79	4120	80	3830	82	3580	83	3330	98	109
25	79	5590	83	4640	84	4350	85	4050	86	3780	100	110	25	77	5330	80	4330	82	4050	83	3780	84	3530	98	109
30	80	5930	84	4910	85	4600	86	4300	87	4010	100	110	30	78	5530	82	4590	83	4290	84	4000	85	3730	98	108
35	82	6290	85	5220	86	4880	87	4560	88	4260	100	110	35	79	5870	83	4860	84	4550	85	4250	86	3960	98	108
40	83	6700	87	5550	88	5200	89	4860	90	4530	100	110	40	81	6240	84	5170	85	4840	86	4520	87	4210	98	108
44	84	7060	88	5850	89	5480	90	5120	90	4780	100	110	44	82	6570	85	5440	86	5100	87	4760	88	4440	98	108

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
5000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
VENR = 160 KIAS								VENR = 160 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	90	5500	90	4140	90	3750	90	3390	90	3070	97	109	-35	91	5490	91	4140	91	3760	91	3400	91	3080	96	109
-30	90	5610	90	4220	90	3830	90	3470	90	3130	97	109	-30	90	5600	90	4220	90	3830	90	3470	90	3140	96	109
-25	90	5720	90	4300	90	3900	90	3540	90	3200	97	109	-25	90	5700	90	4310	90	3910	90	3550	90	3210	96	109
-20	90	5820	90	4390	90	3980	90	3610	90	3260	97	109	-20	90	5810	90	4390	90	3990	90	3620	90	3270	95	108
-15	89	5900	89	4450	89	4040	89	3660	89	3310	97	109	-15	90	5880	90	4450	90	4040	90	3670	90	3320	95	108
-10	89	5930	89	4470	89	4060	89	3680	89	3330	97	109	-10	89	5910	89	4470	89	4060	89	3690	89	3340	95	108
-5	88	5950	88	4490	88	4070	88	3690	88	3340	97	109	-5	88	5930	88	4480	88	4070	88	3700	88	3350	95	107
0	87	5910	87	4460	87	4050	87	3670	87	3320	97	108	0	87	5880	87	4450	87	4050	87	3670	87	3320	95	107
5	86	5860	86	4430	86	4020	86	3640	86	3300	96	108	5	86	5840	86	4420	86	4010	86	3640	86	3300	95	107
10	84	5720	84	4320	84	3920	84	3550	84	3210	96	108	10	84	5690	84	4300	84	3910	84	3550	84	3210	95	106
15	82	5570	82	4200	82	3820	82	3460	82	3120	96	107	15	82	5540	82	4190	82	3810	82	3450	82	3120	94	106
20	80	5430	80	4090	80	3710	80	3360	80	3100	96	107	20	80	5390	80	4070	80	3700	80	3350	80	3030	94	105
25	78	5280	78	4030	79	3770	80	3520	82	3280	96	107	25	78	5240	78	3960	78	3600	78	3270	79	3040	94	105
30	76	5160	79	4270	81	3990	82	3730	83	3470	96	107	30	76	5100	77	3970	78	3710	79	3460	80	3220	94	105
35	77	5470	81	4520	82	4230	83	3950	84	3680	96	107	35	75	5090	78	4210	79	3940	80	3670	82	3420	94	105
40	79	5810	82	4810	83	4500	84	4200	85	3910	96	107	40	76	5410	80	4470	81	4180	82	3900	83	3630	94	105
44	80	6110	83	5060	84	4730	85	4420	86	4120	96	107	44	77	5680	81	4690	82	4390	83	4100	84	3810	94	105

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS																	
VENR = 159 KIAS								VENR = 158 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	91	5490	91	4150	91	3770	91	3420	91	3090	96	110	-35	91	5490	91	4170	91	3790	91	3440	91	3110	97	111
-30	91	5590	91	4230	91	3850	91	3490	91	3160	96	110	-30	91	5600	91	4250	91	3860	91	3510	91	3180	97	111
-25	91	5700	91	4310	91	3920	91	3560	91	3220	96	110	-25	91	5700	91	4330	91	3940	91	3580	91	3240	97	111
-20	90	5800	90	4390	90	4000	90	3630	90	3290	96	109	-20	91	5800	91	4410	91	4010	91	3650	91	3310	97	110
-15	90	5870	90	4450	90	4050	90	3680	90	3330	96	109	-15	90	5870	90	4460	90	4060	90	3690	90	3350	96	110
-10	89	5900	89	4470	89	4070	89	3700	89	3350	95	108	-10	90	5890	90	4480	90	4080	90	3710	90	3370	96	109
-5	88	5910	88	4480	88	4080	88	3710	88	3360	94	107	-5	89	5900	89	4490	89	4090	89	3720	89	3380	95	108
0	87	5860	87	4450	87	4050	87	3680	87	3330	93	106	0	88	5850	88	4450	88	4060	88	3690	88	3350	93	106
5	86	5810	86	4410	86	4010	86	3650	86	3300	93	105	5	86	5800	86	4410	86	4020	86	3650	86	3310	92	105
10	84	5660	84	4300	84	3910	84	3550	84	3210	93	105	10	84	5640	84	4290	84	3910	84	3550	84	3220	91	103
15	82	5510	82	4180	82	3800	82	3450	82	3120	92	104	15	82	5480	82	4170	82	3800	82	3450	82	3120	91	103
20	80	5360	80	4060	80	3690	80	3350	80	3030	92	104	20	80	5330	80	4050	80	3680	80	3340	80	3030	90	102
25	78	5210	78	3940	78	3580	78	3240	78	2930	92	103	25	78	5180	78	3930	78	3570	78	3240	78	2930	90	102
30	76	5060	76	3830	76	3470	77	3210	78	2980	92	103	30	76	5020	76	3810	76	3460	76	3140	76	2830	90	101
35	74	4910	76	3900	77	3650	78	3400	79	3160	92	103	35	74	4870	74	3690	74	3370	75	3140	76	2920	90	101
40	74	5020	77	4140	78	3870	79	3610	80	3360	92	103	40	72	4730	75	3830	76	3580	77	3330	78	3100	90	101
44	75	5270	78	4350	79	4060	80	3790	81	3520	92	103	44	72	4880	76	4020	77	3760	78	3500	79	3260	90	101

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																	
VENR = 158 KIAS								VENR = 157 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	92	5510	92	4190	92	3820	92	3470	92	3140	98	112	-35	92	5540	92	4230	92	3850	92	3500	92	3180	99	113
-30	91	5610	91	4270	91	3890	91	3540	91	3210	98	112	-30	92	5640	92	4310	92	3930	92	3570	92	3240	98	113
-25	91	5710	91	4350	91	3960	91	3600	91	3270	98	112	-25	92	5740	92	4390	92	4000	92	3640	92	3310	98	113
-20	91	5810	91	4430	91	4040	91	3670	91	3330	97	111	-20	91	5830	91	4460	91	4070	91	3710	91	3370	98	113
-15	91	5880	91	4490	91	4090	91	3720	91	3380	97	111	-15	91	5900	91	4520	91	4120	91	3750	91	3410	98	112
-10	90	5900	90	4500	90	4110	90	3740	90	3390	96	110	-10	90	5920	90	4530	90	4140	90	3770	90	3430	97	111
-5	89	5910	89	4510	89	4110	89	3740	89	3400	95	109	-5	89	5920	89	4540	89	4140	89	3770	89	3430	96	110
0	88	5850	88	4470	88	4070	88	3710	88	3370	94	108	0	88	5860	88	4490	88	4100	88	3730	88	3390	95	109
5	87	5790	87	4420	87	4030	87	3670	87	3330	92	106	5	87	5800	87	4440	87	4050	87	3690	87	3360	93	107
10	85	5630	85	4300	85	3920	85	3560	85	3230	90	103	10	85	5630	85	4310	85	3930	85	3580	85	3250	91	104
15	83	5470	83	4170	83	3800	83	3450	83	3130	88	101	15	83	5460	83	4180	83	3810	83	3470	83	3150	88	101
20	81	5310	81	4050	81	3680	81	3350	81	3030	88	101	20	81	5300	81	4050	81	3690	81	3350	81	3040	86	99
25	79	5150	79	3920	79	3570	79	3240	79	2930	88	100	25	79	5140	79	3920	79	3570	79	3240	79	2940	86	99
30	76	5000	76	3800	76	3450	76	3130	76	2830	88	100	30	77	4970	77	3790	77	3450	77	3130	77	2830	86	98
35	74	4840	74	3680	74	3340	74	3020	74	2730	88	99	35	75	4820	75	3670	75	3330	75	3020	75	2740	86	98
40	72	4690	72	3560	73	3300	74	3070	75	2850	88	99	40	72	4660	72	3540	72	3220	72	2910	72	2640	86	97
44	70	4570	73	3710	74	3460	75	3220	76	2990	88	99	44	71	4540	71	3400	71	3180	72	2960	73	2740	86	97

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 6000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								WEIGHT = 16000 LBS							
VENR = 164 KIAS								VENR = 163 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS					TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS				10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS
-35	89 5990	89 4430	89 4000	89 3610	89 3250	107	117	-35	90 5960	90 4420	90 3990	90 3600	90 3240	106	116
-30	89 6120	89 4530	89 4090	89 3690	89 3320	107	117	-30	89 6090	89 4510	89 4080	89 3680	89 3320	106	116
-25	89 6230	89 4610	89 4170	89 3760	89 3390	107	117	-25	89 6200	89 4600	89 4160	89 3750	89 3380	106	116
-20	89 6340	89 4700	89 4250	89 3830	89 3450	107	117	-20	89 6310	89 4680	89 4230	89 3820	89 3450	106	116
-15	88 6340	88 4700	88 4250	88 3830	88 3490	107	117	-15	88 6300	88 4680	88 4230	88 3820	88 3450	106	116
-10	86 6300	86 4670	86 4220	87 3890	89 3630	107	117	-10	87 6260	87 4650	87 4210	87 3800	87 3500	106	116
-5	85 6250	85 4640	87 4340	88 4060	89 3790	107	117	-5	85 6220	85 4620	85 4180	87 3910	88 3650	105	116
0	84 6200	86 4830	87 4530	89 4240	90 3960	107	116	0	84 6160	85 4650	86 4360	87 4080	89 3810	105	115
5	82 6120	87 5060	88 4750	89 4440	91 4150	106	116	5	83 6080	85 4870	86 4570	88 4280	89 3990	105	115
10	83 6410	88 5330	89 5000	90 4680	91 4380	106	116	10	82 6170	86 5140	88 4820	89 4510	90 4210	105	115
15	84 6770	89 5640	90 5290	91 4950	92 4630	106	116	15	83 6520	88 5430	89 5090	90 4760	91 4450	105	115
20	86 7170	90 5970	91 5600	92 5240	93 4900	106	116	20	85 6900	89 5750	90 5390	91 5040	92 4710	105	115
25	87 7620	91 6340	92 5950	93 5570	94 5200	106	116	25	86 7330	90 6100	91 5720	92 5350	93 5000	105	115
30	88 8120	92 6750	93 6330	94 5930	96 5540	106	116	30	87 7800	91 6490	92 6080	93 5690	94 5320	105	115
35	90 8670	93 7210	94 6760	96 6330	97 5910	106	116	35	88 8330	92 6920	93 6490	94 6070	95 5670	105	115
39	91 9170	94 7610	95 7130	97 6680	97 6240	106	116	40	90 8920	93 7400	95 6940	96 6500	96 6070	105	115
40	91 9300	95 7720	96 7230	97 6770	98 6330	106	116	41	90 9050	94 7510	95 7030	96 6590	97 6150	105	115
41	91 9440	95 7830	96 7340	97 6860	98 6410	106	116	42	90 9180	94 7610	95 7130	96 6680	97 6240	105	115

WEIGHT = 15500 LBS								WEIGHT = 15000 LBS							
VENR = 163 KIAS								VENR = 162 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS					TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS				10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS
-35	90 5920	90 4400	90 3980	90 3590	90 3240	104	115	-35	90 5880	90 4380	90 3970	90 3590	90 3230	102	113
-30	90 6040	90 4490	90 4070	90 3670	90 3310	104	115	-30	90 6000	90 4480	90 4050	90 3660	90 3310	102	113
-25	89 6150	89 4580	89 4140	89 3740	89 3370	104	115	-25	90 6110	90 4560	90 4130	90 3730	90 3370	102	113
-20	89 6260	89 4660	89 4220	89 3810	89 3440	104	114	-20	89 6210	89 4640	89 4200	89 3800	89 3430	102	113
-15	88 6250	88 4650	88 4210	88 3810	88 3440	104	114	-15	88 6200	88 4630	88 4200	88 3800	88 3430	102	113
-10	87 6210	87 4630	87 4190	87 3790	87 3420	104	114	-10	87 6160	87 4600	87 4170	87 3770	87 3410	102	113
-5	86 6160	86 4590	86 4160	86 3760	86 3400	104	114	-5	86 6110	86 4570	86 4140	86 3740	86 3380	102	112
0	84 6100	84 4550	84 4120	85 3830	87 3570	104	114	0	84 6050	84 4530	84 4100	84 3710	84 3350	102	112
5	83 6020	83 4580	85 4290	86 4010	87 3750	104	114	5	83 5960	83 4460	83 4050	84 3760	85 3510	102	112
10	81 5900	84 4820	86 4520	87 4230	88 3950	104	114	10	81 5840	82 4520	84 4230	85 3960	86 3700	102	112
15	81 6120	86 5090	87 4770	88 4460	89 4170	104	114	15	79 5730	83 4770	85 4470	86 4180	87 3900	102	112
20	83 6470	87 5380	88 5040	89 4720	90 4410	104	114	20	81 6060	85 5040	86 4720	87 4410	88 4120	102	112
25	84 6860	88 5700	89 5350	90 5000	91 4670	104	114	25	82 6420	86 5330	87 5000	88 4680	89 4370	102	112
30	85 7290	89 6060	90 5680	91 5320	92 4970	104	114	30	83 6810	87 5660	88 5310	89 4960	90 4640	102	112
35	87 7770	90 6460	91 6060	92 5670	93 5290	104	114	35	85 7250	88 6030	89 5650	90 5280	91 4930	102	112
40	88 8310	91 6900	93 6470	94 6050	94 5660	104	114	40	86 7750	89 6430	90 6030	91 5640	92 5270	102	112
42	89 8550	92 7100	93 6650	94 6220	95 5810	104	114	42	87 7960	90 6610	91 6190	92 5790	93 5410	102	112

WEIGHT = 14500 LBS								WEIGHT = 14000 LBS							
VENR = 161 KIAS								VENR = 160 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS					TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS				
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS				10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2 KIAS
-35	90 5850	90 4370	90 3960	90 3580	90 3230	100	112	-35	90 5820	90 4370	90 3960	90 3580	90 3240	98	111
-30	90 5960	90 4460	90 4040	90 3660	90 3300	100	112	-30	90 5930	90 4450	90 4040	90 3660	90 3310	98	111
-25	90 6070	90 4540	90 4120	90 3730	90 3370	100	112	-25	90 6030	90 4530	90 4110	90 3730	90 3370	98	111
-20	90 6170	90 4620	90 4190	90 3790	90 3430	100	112	-20	90 6140	90 4610	90 4180	90 3790	90 3430	98	111
-15	88 6150	88 4610	88 4180	88 3790	88 3420	100	112	-15	89 6120	89 4600	89 4170	89 3780	89 3420	98	110
-10	87 6110	87 4580	87 4160	87 3760	87 3400	100	111	-10	87 6070	87 4570	87 4140	87 3760	87 3400	98	110
-5	86 6060	86 4540	86 4120	86 3730	86 3370	100	111	-5	86 6010	86 4530	86 4110	86 3720	86 3370	98	110
0	85 6000	85 4500	85 4080	85 3700	85 3340	100	111	0	85 5950	85 4480	85 4070	85 3680	85 3330	98	109
5	83 5910	83 4440	83 4020	83 3640	83 3290	100	110	5	83 5860	83 4410	83 4010	83 3630	83 3280	98	109
10	81 5780	81 4340	81 3960	81 3580	81 3230	100	110	10	81 5730	81 4320	81 3920	81 3550	82 3220	98	109
15	79 5650	81 4460	83 4180	84 3910	85 3640	100	110	15	80 5600	80 4220	80 3900	81 3640	83 3400	98	109
20	78 5670	82 4710	84 4420	85 4120	86 3850	100	110	20	78 5470	80 4400	81 4120	83 3850	84 3590	98	109
25	80 6000	84 4980	85 4670	86 4360	87 4070	100	110	25	78 5600	81 4650	83 4350	84 4070	85 3790	98	108
30	81 6360	85 5280	86 4950	87 4630	88 4320	100	110	30	79 5930	83 4920	84 4610	85 4310	86 4020	98	108
35	82 6760	86 5620	87 5260	88 4920	89 4590	100	110	35	80 6300	84 5230	85 4900	86 4580	87 4270	98	108
40	84 7210	87 5990	88 5610	89 5250	90 4900	100	110	40	82 6710	85 5570	86 5220	87 4880	88 4550	98	108
42	84 7410	88 6150	89 5760	90 5390	91 5030	100	110	42	82 6890	86 5720	87 5350	88 5000	88 4670	98	108



Figure 7-2 (Sheet 13 of 30)

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 7°
6000 FEET****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS													
						10 KTS		20 KTS		30 KTS															
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT														
-35	91	5800	91	4360	91	3960	91	3590	91	3240	97	109	-35	91	5780	91	4370	91	3970	91	3600	91	3250	96	110
-30	91	5910	91	4450	91	4040	91	3660	91	3310	97	109	-30	91	5890	91	4450	91	4050	91	3670	91	3320	96	109
-25	90	6010	90	4530	90	4110	90	3730	90	3370	97	109	-25	91	5990	91	4530	91	4120	91	3740	91	3380	96	109
-20	90	6110	90	4600	90	4180	90	3790	90	3430	97	109	-20	90	6090	90	4600	90	4190	90	3800	90	3440	96	109
-15	89	6090	89	4590	89	4170	89	3780	89	3420	97	109	-15	89	6060	89	4590	89	4170	89	3790	89	3430	95	108
-10	88	6040	88	4550	88	4140	88	3750	88	3400	97	109	-10	88	6010	88	4550	88	4140	88	3750	88	3400	95	107
-5	86	5980	86	4510	86	4100	86	3720	86	3360	96	108	-5	87	5950	87	4500	87	4090	87	3720	87	3370	95	107
0	85	5910	85	4460	85	4060	85	3680	85	3330	96	108	0	85	5880	85	4450	85	4050	85	3670	85	3330	95	107
5	83	5820	83	4400	83	3990	83	3620	83	3270	96	108	5	84	5790	84	4380	84	3980	84	3610	84	3270	95	106
10	82	5690	82	4290	82	3900	82	3530	82	3200	96	107	10	82	5650	82	4280	82	3890	82	3530	82	3190	94	106
15	80	5560	80	4190	80	3810	80	3450	80	3160	96	107	15	80	5510	80	4170	80	3790	80	3440	80	3110	94	105
20	78	5420	78	4100	79	3830	80	3580	81	3340	96	107	20	78	5380	78	4070	78	3690	78	3350	79	3100	94	105
25	76	5290	79	4330	80	4050	81	3790	82	3530	96	107	25	76	5240	77	4020	78	3760	79	3510	80	3270	94	105
30	77	5530	80	4590	81	4290	82	4010	83	3730	96	107	30	74	5140	78	4260	79	3990	80	3720	81	3470	94	105
35	78	5870	82	4860	83	4550	84	4250	85	3970	96	107	35	76	5460	79	4520	80	4230	81	3940	82	3680	94	105
40	80	6240	83	5170	84	4840	85	4530	86	4220	96	107	40	77	5800	80	4800	81	4490	82	4190	83	3910	94	105
42	80	6400	83	5310	84	4970	85	4640	86	4330	96	107	42	78	5940	81	4920	82	4610	83	4300	84	4010	94	105

WEIGHT = 12500 LBS										VENR = 158 KIAS				WEIGHT = 12000 LBS										VENR = 157 KIAS				
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2					
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS							
	V1 DIST		V1 DIST		V1 DIST	V1 DIST	V1 DIST		V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	91	5780	91	4380	91	3980	91	3610	91	3270	97 111	-35	92	5780	92	4390	92	4000	92	3630	92	3290	98 112					
-30	91	5890	91	4460	91	4060	91	3690	91	3340	97 110	-30	91	5890	91	4480	91	4080	91	3710	91	3360	98 111					
-25	91	5980	91	4540	91	4130	91	3750	91	3400	97 110	-25	91	5980	91	4550	91	4140	91	3770	91	3420	97 111					
-20	91	6080	91	4610	91	4200	91	3810	91	3460	96 110	-20	91	6070	91	4620	91	4210	91	3830	91	3480	97 111					
-15	89	6050	89	4590	89	4180	89	3800	89	3440	95 108	-15	90	6040	90	4600	90	4190	90	3810	90	3460	96 109					
-10	88	5990	88	4550	88	4140	88	3760	88	3410	94 107	-10	89	5980	89	4560	89	4150	89	3780	89	3430	94 108					
-5	87	5930	87	4500	87	4100	87	3720	87	3370	93 106	-5	87	5910	87	4500	87	4100	87	3730	87	3390	93 106					
0	86	5860	86	4450	86	4050	86	3680	86	3330	93 105	0	86	5840	86	4450	86	4050	86	3680	86	3340	91 104					
5	84	5760	84	4370	84	3980	84	3610	84	3270	93 105	5	84	5740	84	4370	84	3980	84	3620	84	3280	91 103					
10	82	5620	82	4270	82	3880	82	3520	82	3190	93 104	10	82	5590	82	4260	82	3880	82	3520	82	3190	91 103					
15	80	5480	80	4160	80	3780	80	3430	80	3100	92 104	15	80	5450	80	4150	80	3770	80	3430	80	3100	90 102					
20	78	5340	78	4050	78	3680	78	3340	78	3020	92 103	20	78	5310	78	4030	78	3670	78	3330	78	3010	90 102					
25	76	5200	76	3940	76	3580	76	3260	77	3030	92 103	25	76	5160	76	3920	76	3560	76	3230	76	2920	90 101					
30	74	5060	75	3950	77	3690	78	3450	79	3210	92 103	30	74	5020	74	3810	74	3460	75	3190	76	2960	90 101					
35	73	5060	77	4190	78	3920	79	3660	80	3400	92 103	35	72	4870	74	3870	75	3620	76	3370	77	3140	90 101					
40	75	5380	78	4450	79	4160	80	3880	81	3610	92 103	40	72	4980	76	4110	77	3840	78	3590	78	3340	90 101					
42	75	5510	79	4560	80	4260	80	3980	81	3700	92 103	42	73	5100	76	4220	77	3940	78	3670	79	3410	90 101					

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS																	
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS													
						10 KTS		20 KTS		30 KTS															
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT														
-35	92	5800	92	4420	92	4030	92	3660	92	3320	99	113	-35	92	5820	92	4450	92	4060	92	3700	92	3360	99	114
-30	92	5900	92	4500	92	4100	92	3730	92	3390	98	113	-30	92	5930	92	4540	92	4140	92	3770	92	3430	99	114
-25	92	5990	92	4570	92	4170	92	3800	92	3450	98	112	-25	92	6020	92	4610	92	4210	92	3830	92	3480	99	113
-20	91	6080	91	4650	91	4240	91	3860	91	3510	98	112	-20	92	6110	92	4680	92	4270	92	3890	92	3540	99	113
-15	90	6050	90	4620	90	4210	90	3840	90	3490	97	110	-15	91	6070	91	4650	91	4240	91	3870	91	3520	97	112
-10	89	5980	89	4570	89	4170	89	3800	89	3450	95	109	-10	89	6000	89	4600	89	4200	89	3820	89	3480	96	110
-5	87	5910	87	4520	87	4120	87	3750	87	3410	93	107	-5	88	5920	88	4540	88	4140	88	3770	88	3430	94	108
0	86	5830	86	4460	86	4060	86	3700	86	3360	92	105	0	86	5840	86	4470	86	4080	86	3720	86	3380	92	106
5	85	5730	85	4370	85	3990	85	3630	85	3290	90	103	5	85	5720	85	4390	85	4000	85	3650	85	3310	90	104
10	83	5580	83	4260	83	3880	83	3530	83	3200	88	101	10	83	5570	83	4270	83	3890	83	3540	83	3220	88	101
15	81	5430	81	4140	81	3770	81	3430	81	3110	88	101	15	81	5420	81	4150	81	3780	81	3440	81	3120	86	99
20	79	5280	79	4030	79	3660	79	3330	79	3010	88	100	20	79	5260	79	4020	79	3670	79	3330	79	3020	86	99
25	77	5130	77	3910	77	3560	77	3230	77	2920	88	100	25	77	5110	77	3900	77	3550	77	3230	77	2920	86	98
30	75	4980	75	3790	75	3440	75	3120	75	2820	88	99	30	75	4960	75	3780	75	3440	75	3120	75	2820	86	98
35	72	4830	72	3670	72	3340	74	3110	75	2890	88	99	35	73	4800	73	3660	73	3320	73	3010	73	2730	86	97
40	70	4690	73	3790	74	3540	75	3300	76	3070	88	99	40	71	4650	71	3540	71	3250	72	3020	73	2810	86	97
42	70	4710	73	3880	74	3630	75	3380	76	3140	88	99	42	70	4600	71	3570	72	3330	73	3100	74	2880	86	97



Figure 7-2 (Sheet 14 of 30)

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 7000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 163 KIAS										WEIGHT = 16000 LBS										VENR = 162 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS					V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS

WEIGHT = 15500 LBS										VENR = 161 KIAS				WEIGHT = 15000 LBS										VENR = 161 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	KIAS
	10 KTS				10 KTS		20 KTS		30 KTS						10 KTS				10 KTS		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	89	6120	89	4550	89	4120	89	3720	89	3360	104	114	-35	90	6070	90	4530	90	4110	90	3710	90	3350	102	113		
-30	89	6170	89	4590	89	4160	89	3760	89	3390	104	114	-30	89	6130	89	4570	89	4140	89	3750	89	3380	102	113		
-25	88	6220	88	4630	88	4190	88	3790	88	3420	104	114	-25	88	6170	88	4610	88	4180	88	3780	88	3410	102	113		
-20	87	6250	87	4650	87	4210	87	3810	87	3440	104	114	-20	87	6200	87	4630	87	4200	87	3800	87	3430	102	113		
-15	86	6220	86	4640	86	4200	86	3800	86	3420	104	114	-15	86	6160	86	4610	86	4180	86	3780	86	3410	102	112		
-10	85	6180	85	4610	85	4180	85	3790	86	3540	104	114	-10	85	6130	85	4590	85	4160	85	3760	85	3400	102	112		
-5	83	6140	83	4580	84	4230	86	3950	87	3690	104	114	-5	84	6080	84	4550	84	4130	84	3730	85	3460	102	112		
0	82	6090	83	4700	85	4410	86	4130	87	3850	104	114	0	82	6030	82	4520	83	4130	84	3860	85	3610	102	112		
5	81	6000	84	4940	86	4630	87	4340	88	4040	104	114	5	81	5940	82	4620	84	4330	85	4060	86	3790	102	112		
10	81	6230	85	5190	87	4870	88	4560	89	4260	104	114	10	79	5840	83	4870	85	4560	86	4270	87	3980	102	112		
15	82	6580	86	5480	88	5140	89	4810	90	4500	104	114	15	80	6160	84	5130	86	4810	87	4500	88	4200	102	112		
20	84	6970	88	5800	89	5440	90	5100	91	4760	104	114	20	82	6510	85	5420	87	5090	88	4760	89	4450	102	112		
25	85	7390	89	6160	90	5780	91	5410	92	5060	104	114	25	83	6910	87	5750	88	5390	89	5050	90	4720	102	112		
30	86	7870	90	6550	91	6150	92	5760	93	5380	104	114	30	84	7350	88	6110	89	5730	90	5370	91	5010	102	112		
35	87	8410	91	7000	92	6560	93	6140	94	5740	104	114	35	85	7840	89	6520	90	6110	91	5720	92	5350	102	112		
40	89	9010	92	7480	93	7020	94	6570	95	6140	103	114	40	87	8380	90	6970	91	6530	92	6110	93	5710	102	112		

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
7000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
 LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
 ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							VENR = 158 KIAS							WEIGHT = 13000 LBS							VENR = 157 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS		TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS						
	10 KTS				20 KTS				30 KTS								10 KTS				20 KTS						30 KTS			
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-35	90	5980	90	4500	90	4090	90	3710	90	3360	97	109	-35	91	5960	91	4510	91	4100	91	3720	91	3370	96	109					
-30	90	6020	90	4540	90	4120	90	3740	90	3380	97	109	-30	90	6000	90	4540	90	4130	90	3740	90	3390	95	108					
-25	89	6060	89	4570	89	4150	89	3760	89	3410	97	109	-25	89	6040	89	4570	89	4150	89	3770	89	3410	95	108					
-20	88	6080	88	4580	88	4160	88	3780	88	3420	97	109	-20	88	6050	88	4580	88	4160	88	3780	88	3430	95	107					
-15	87	6040	87	4560	87	4140	87	3760	87	3400	97	108	-15	87	6010	87	4550	87	4140	87	3760	87	3400	95	107					
-10	86	5990	86	4530	86	4110	86	3730	86	3380	96	108	-10	86	5960	86	4520	86	4110	86	3730	86	3380	95	107					
-5	84	5940	84	4490	84	4080	84	3700	84	3350	96	108	-5	85	5910	85	4470	85	4070	85	3690	85	3340	95	106					
0	83	5880	83	4450	83	4040	83	3660	83	3310	96	107	0	83	5850	83	4430	83	4030	83	3660	83	3310	94	106					
5	81	5780	81	4370	81	3970	81	3600	81	3250	96	107	5	82	5740	82	4350	82	3960	82	3590	82	3250	94	106					
10	80	5670	80	4280	80	3890	80	3520	80	3230	96	107	10	80	5620	80	4260	80	3870	80	3510	80	3180	94	105					
15	78	5550	78	4190	79	3900	80	3650	81	3400	96	107	15	78	5500	78	4160	78	3780	78	3430	79	3160	94	105					
20	76	5420	79	4400	80	4120	81	3850	82	3600	96	107	20	76	5370	76	4090	78	3830	79	3580	80	3330	94	105					
25	76	5600	80	4660	81	4360	82	4070	83	3800	96	107	25	74	5240	78	4320	79	4050	80	3780	81	3530	94	105					
30	78	5940	81	4930	82	4620	83	4320	84	4030	96	107	30	75	5520	79	4580	80	4290	81	4000	82	3730	94	105					
35	79	6310	82	5240	83	4910	84	4590	85	4280	96	107	35	77	5860	80	4860	81	4550	82	4250	83	3970	94	105					
40	80	6720	84	5580	85	5230	86	4890	86	4560	96	107	40	78	6230	81	5170	82	4840	83	4520	84	4220	94	105					

WEIGHT = 12500 LBS										VENR = 156 KIAS										WEIGHT = 12000 LBS										VENR = 156 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		HEADWINDS						VR V2			TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		HEADWINDS						VR V2														
					10 KTS		20 KTS		30 KTS										10 KTS		20 KTS		30 KTS																
					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST									V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST															
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT													
-35	91	5950	91	4510	91	4110	91	3730	91	3380	97	110		-35	91	5950	91	4530	91	4120	91	3750	91	3400	97	111													
-30	90	5990	90	4540	90	4130	90	3760	90	3410	96	109		-30	90	5990	90	4560	90	4150	90	3770	90	3430	97	110													
-25	89	6020	89	4570	89	4160	89	3780	89	3430	95	108		-25	90	6020	90	4580	90	4170	90	3790	90	3440	96	109													
-20	89	6030	89	4580	89	4170	89	3790	89	3440	94	107		-20	89	6020	89	4590	89	4180	89	3800	89	3450	95	108													
-15	87	5990	87	4550	87	4140	87	3760	87	3410	93	106		-15	88	5970	88	4550	88	4150	88	3770	88	3420	93	107													
-10	86	5940	86	4510	86	4110	86	3730	86	3380	93	105		-10	86	5920	86	4510	86	4110	86	3740	86	3390	92	105													
-5	85	5880	85	4470	85	4060	85	3690	85	3350	93	105		-5	85	5860	85	4460	85	4070	85	3700	85	3360	91	104													
0	83	5820	83	4420	83	4020	83	3650	83	3310	93	105		0	84	5790	84	4410	84	4020	84	3660	84	3320	91	103													
5	82	5710	82	4340	82	3950	82	3580	82	3250	92	104		5	82	5680	82	4330	82	3940	82	3580	82	3250	91	103													
10	80	5590	80	4240	80	3860	80	3500	80	3170	92	104		10	80	5560	80	4230	80	3850	80	3500	80	3170	90	102													
15	78	5460	78	4140	78	3770	78	3420	78	3090	92	103		15	78	5420	78	4130	78	3760	78	3410	78	3090	90	102													
20	76	5320	76	4040	76	3670	76	3330	77	3090	92	103		20	77	5290	77	4020	77	3660	77	3320	77	3000	90	101													
25	74	5190	75	4010	76	3750	77	3500	78	3260	92	103		25	75	5150	75	3910	75	3560	75	3240	76	3010	90	101													
30	73	5120	76	4250	77	3970	79	3710	80	3460	92	103		30	73	5010	74	3930	75	3670	76	3430	77	3190	90	101													
35	74	5440	78	4500	79	4210	80	3930	81	3660	92	103		35	72	5030	75	4160	76	3890	77	3630	78	3380	90	101													
40	76	5770	79	4780	80	4480	81	4180	82	3900	92	103		40	73	5340	76	4420	77	4130	78	3860	79	3590	90	101													

WEIGHT = 11500 LBS										VENR = 155 KIAS		WEIGHT = 11000 LBS										VENR = 155 KIAS			
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS						
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS								
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							
-35	91	5960	91	4550	91	4150	91	3780	91	3430	98	112	-35	92	5990	92	4590	92	4180	92	3810	92	3470	99	113
-30	91	6000	91	4580	91	4170	91	3800	91	3450	97	111	-30	91	6020	91	4610	91	4210	91	3830	91	3490	98	112
-25	90	6020	90	4600	90	4190	90	3820	90	3470	96	110	-25	90	6040	90	4630	90	4220	90	3850	90	3500	97	111
-20	89	6030	89	4600	89	4200	89	3820	89	3470	95	109	-20	90	6040	90	4630	90	4230	90	3850	90	3500	96	110
-15	88	5970	88	4560	88	4160	88	3790	88	3440	94	108	-15	88	5980	88	4590	88	4190	88	3820	88	3470	95	109
-10	87	5920	87	4520	87	4120	87	3750	87	3410	92	106	-10	87	5920	87	4540	87	4140	87	3780	87	3430	93	107
-5	85	5850	85	4470	85	4080	85	3710	85	3370	91	104	-5	86	5850	86	4490	86	4090	86	3730	86	3390	92	105
0	84	5780	84	4420	84	4030	84	3670	84	3330	89	103	0	84	5780	84	4430	84	4040	84	3680	84	3350	90	103
5	82	5660	82	4330	82	3940	82	3590	82	3260	88	101	5	83	5650	83	4330	83	3950	83	3600	83	3270	88	101
10	81	5530	81	4230	81	3850	81	3500	81	3180	88	101	10	81	5520	81	4230	81	3860	81	3510	81	3190	86	99
15	79	5400	79	4120	79	3750	79	3410	79	3090	88	100	15	79	5380	79	4120	79	3750	79	3410	79	3100	86	99
20	77	5260	77	4010	77	3650	77	3310	77	3000	88	100	20	77	5230	77	4000	77	3650	77	3310	77	3000	86	98
25	75	5110	75	3900	75	3540	75	3220	75	2910	88	99	25	75	5090	75	3880	75	3540	75	3210	75	2910	86	98
30	73	4970	73	3780	73	3440	73	3160	74	2930	88	99	30	73	4940	73	3770	73	3420	73	3110	73	2810	86	97
35	71	4830	72	3840	73	3590	74	3340	75	3110	88	99	35	71	4790	71	3650	71	3310	72	3070	73	2850	86	97
40	71	4930	74	4070	75	3810	76	3550	77	3310	88	99	40	69	4650	71	3740	72	3490	73	3250	74	3020	86	97

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 8000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 161 KIAS										WEIGHT = 16000 LBS										VENR = 161 KIAS									
TEMP DEG C	TAILWIND		ZERO		HEADWINDS								VR V2		TEMP DEG C	TAILWIND		ZERO		HEADWINDS								VR V2											
	10 KTS		WIND		10 KTS		20 KTS		30 KTS		10 KTS					WIND		10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS								
-35	88	6360	88	4710	88	4260	88	3850	88	3470	107	117	-35	88	6330	88	4700	88	4250	88	3840	88	3460	106	116	-35	88	6330	88	4700	88	4250	88	3840	88	3460	106	116	
-30	87	6350	87	4710	87	4260	87	3850	88	3590	107	117	-30	87	6310	87	4690	87	4240	87	3830	87	3460	106	116	-30	87	6310	87	4690	87	4240	87	3830	87	3460	106	116	
-25	86	6330	86	4700	86	4280	88	4000	89	3740	107	117	-25	86	6290	86	4680	86	4230	86	3860	88	3600	105	116	-25	86	6290	86	4680	86	4230	86	3860	88	3600	105	116	
-20	85	6310	85	4750	87	4460	88	4170	89	3900	107	117	-20	85	6280	85	4670	85	4290	87	4020	88	3750	105	116	-20	85	6280	85	4670	85	4290	87	4020	88	3750	105	116	
-15	84	6300	86	4950	87	4640	89	4350	90	4060	107	116	-15	84	6260	85	4770	86	4470	87	4190	89	3910	105	115	-15	84	6260	85	4770	86	4470	87	4190	89	3910	105	115	
-10	82	6270	86	5160	88	4840	89	4530	90	4230	106	116	-10	83	6230	85	4960	87	4660	88	4360	89	4080	105	115	-10	83	6230	85	4960	87	4660	88	4360	89	4080	105	115	
-5	83	6440	87	5370	88	5040	90	4720	91	4410	106	116	-5	81	6200	86	5180	87	4850	88	4540	90	4250	105	115	-5	81	6200	86	5180	87	4850	88	4540	90	4250	105	115	
0	83	6730	88	5610	89	5260	90	4930	91	4610	106	116	0	82	6470	86	5400	88	5070	89	4750	90	4440	105	115	0	82	6470	86	5400	88	5070	89	4750	90	4440	105	115	
5	84	7070	88	5900	90	5540	91	5190	92	4850	106	116	5	83	6800	87	5670	88	5330	90	4990	91	4670	105	115	5	83	6800	87	5670	88	5330	90	4990	91	4670	105	115	
10	85	7440	89	6210	91	5830	92	5460	93	5110	106	116	10	84	7150	88	5970	89	5600	91	5250	92	4910	105	115	10	84	7150	88	5970	89	5600	91	5250	92	4910	105	115	
15	86	7880	90	6570	92	6170	93	5790	94	5410	106	116	15	85	7570	89	6320	90	5930	92	5560	93	5200	105	115	15	85	7570	89	6320	90	5930	92	5560	93	5200	105	115	
20	87	8370	91	6980	93	6550	94	6140	95	5750	106	116	20	86	8040	90	6700	91	6290	93	5900	94	5520	105	115	20	86	8040	90	6700	91	6290	93	5900	94	5520	105	115	
25	89	8920	93	7430	94	6980	95	6540	96	6120	106	116	25	88	8560	91	7140	93	6700	94	6280	95	5870	105	115	25	88	8560	91	7140	93	6700	94	6280	95	5870	105	115	
30	90	9540	94	7940	95	7450	96	6980	97	6530	106	116	30	89	9140	93	7620	94	7150	95	6700	96	6270	105	115	30	89	9140	93	7620	94	7150	95	6700	96	6270	105	115	
32	90	9810	94	8160	95	7660	96	7180	97	6710	106	116	32	89	9400	93	7830	94	7340	95	6880	96	6440	105	115	32	89	9400	93	7830	94	7340	95	6880	96	6440	105	115	
													35	90	9800	94	8150	95	7650	96	7160	97	6700	105	115	35	90	9800	94	8150	95	7650	96	7160	97	6700	105	115	
													36	90	9940	94	8270	95	7750	96	7260	97	6790	105	115	36	90	9940	94	8270	95	7750	96	7260	97	6790	105	115	

WEIGHT = 15500 LBS								VENR = 160 KIAS								WEIGHT = 15000 LBS								VENR = 159 KIAS														
TEMP DEG C	TAILWIND		ZERO		HEADWINDS				VR V2		TEMP DEG C	TAILWIND		ZERO		HEADWINDS				VR V2																		
	10 KTS		WIND		10 KTS		20 KTS					30 KTS		10 KTS		WIND		10 KTS				20 KTS		30 KTS														
	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST													
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	88	6270	88	4670	88	4230	88	3820	88	3450	104	114	-35	89	6220	89	4650	89	4210	89	3810	89	3440	102	113	-35	89	6220	89	4650	89	4210	89	3810	89	3440	102	113
-30	87	6260	87	4660	87	4220	87	3810	87	3440	104	114	-30	87	6200	87	4640	87	4200	87	3800	87	3430	102	113	-30	87	6200	87	4640	87	4200	87	3800	87	3430	102	113
-25	86	6240	86	4650	86	4210	86	3810	86	3430	104	114	-25	86	6180	86	4620	86	4190	86	3790	86	3420	102	112	-25	86	6180	86	4620	86	4190	86	3790	86	3420	102	112
-20	85	6210	85	4640	85	4200	85	3800	86	3520	104	114	-20	85	6160	85	4610	85	4180	85	3780	85	3410	102	112	-20	85	6160	85	4610	85	4180	85	3780	85	3410	102	112
-15	84	6190	84	4620	84	4200	85	3930	87	3670	104	114	-15	84	6130	84	4590	84	4160	84	3770	84	3430	102	112	-15	84	6130	84	4590	84	4160	84	3770	84	3430	102	112
-10	83	6160	83	4660	85	4370	86	4090	87	3820	104	114	-10	83	6100	83	4570	83	4140	84	3830	85	3580	102	112	-10	83	6100	83	4570	83	4140	84	3830	85	3580	102	112
-5	81	6130	84	4860	85	4550	86	4270	88	3990	104	114	-5	82	6070	82	4550	83	4270	84	3990	85	3730	102	112	-5	82	6070	82	4550	83	4270	84	3990	85	3730	102	112
0	80	6080	84	5070	86	4760	87	4450	88	4160	104	114	0	80	6020	82	4750	84	4450	85	4170	86	3890	102	112	0	80	6020	82	4750	84	4450	85	4170	86	3890	102	112
5	81	6380	85	5320	87	4990	88	4670	89	4370	104	114	5	79	5970	83	4980	85	4680	86	4370	87	4090	102	112	5	79	5970	83	4980	85	4680	86	4370	87	4090	102	112
10	82	6700	86	5590	87	5250	89	4910	90	4600	104	114	10	80	6280	84	5230	85	4910	87	4590	88	4290	102	112	10	80	6280	84	5230	85	4910	87	4590	88	4290	102	112
15	83	7090	87	5910	88	5550	90	5200	91	4860	104	114	15	81	6630	85	5530	86	5180	88	4860	89	4540	102	112	15	81	6630	85	5530	86	5180	88	4860	89	4540	102	112
20	84	7510	88	6260	89	5880	91	5510	92	5150	104	114	20	82	7020	86	5850	87	5490	89	5140	90	4810	102	112	20	82	7020	86	5850	87	5490	89	5140	90	4810	102	112
25	86	7990	89	6660	91	6250	92	5860	93	5480	104	114	25	84	7450	87	6210	89	5830	90	5460	91	5100	102	112	25	84	7450	87	6210	89	5830	90	5460	91	5100	102	112
30	87	8520	91	7100	92	6660	93	6240	94	5840	104	114	30	85	7940	89	6610	90	6210	91	5810	92	5440	102	112	30	85	7940	89	6610	90	6210	91	5810	92	5440	102	112
35	88	9120	92	7590	93	7120	94	6670	95	6240	103	114	35	86	8480	90	7060	91	6620	92	6200	93	5800	102	112	35	86	8480	90	7060	91	6620	92	6200	93	5800	102	112
36	89	9240	92	7690	93	7210	94	6760	95	6320	103	114	38	87	8830	91	7350	92	6890	92	6460	93	6040	102	112	38	89	9500	93	7900	94	7410	95	6940	95	6490	103	114
38	89	9500	93	7900	94	7410	95	6940	95	6490	103	114																										

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 7°
8000 FEET**

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 157 KIAS										WEIGHT = 13000 LBS										VENR = 156 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS																		
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT			V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT																	
-35	89	6110	89	4610	89	4190	89	3800	89	3440	97 109	-35	90	6090	90	4610	90	4190	90	3800	90	3450	95 108																
-30	88	6090	88	4590	88	4170	88	3780	88	3430	97 109	-30	88	6060	88	4590	88	4170	88	3790	88	3430	95 107																
-25	87	6060	87	4570	87	4150	87	3770	87	3410	97 108	-25	87	6030	87	4560	87	4150	87	3770	87	3410	95 107																
-20	86	6030	86	4550	86	4130	86	3750	86	3390	96 108	-20	86	5990	86	4540	86	4130	86	3750	86	3400	95 107																
-15	85	5990	85	4530	85	4110	85	3730	85	3380	96 108	-15	85	5960	85	4510	85	4110	85	3730	85	3380	95 107																
-10	83	5960	83	4500	83	4090	83	3710	83	3360	96 108	-10	84	5920	84	4480	84	4080	84	3700	84	3350	95 106																
-5	82	5910	82	4470	82	4060	82	3680	82	3330	96 107	-5	82	5870	82	4450	82	4050	82	3670	82	3330	94 106																
0	81	5850	81	4430	81	4020	81	3650	81	3300	96 107	0	81	5810	81	4410	81	4010	81	3640	81	3290	94 106																
5	79	5760	79	4350	79	3960	79	3590	80	3310	96 107	5	80	5710	80	4330	80	3940	80	3570	80	3230	94 105																
10	78	5660	78	4280	79	3980	80	3720	81	3470	96 107	10	78	5610	78	4260	78	3870	78	3510	79	3230	94 105																
15	76	5540	79	4480	80	4200	81	3930	82	3670	96 107	15	76	5490	76	4170	77	3900	78	3650	80	3400	94 105																
20	76	5690	80	4740	81	4430	82	4150	83	3870	96 107	20	74	5370	77	4400	78	4120	80	3850	81	3590	94 105																
25	77	6020	81	5010	82	4690	83	4390	84	4100	96 107	25	75	5600	79	4660	80	4360	81	4070	82	3800	94 105																
30	79	6390	82	5320	83	4980	84	4660	85	4350	96 107	30	76	5930	80	4930	81	4620	82	4320	83	4030	94 105																
35	80	6800	83	5650	84	5300	85	4960	86	4630	96 107	35	78	6300	81	5240	82	4910	83	4590	84	4280	94 105																
38	81	7060	84	5870	85	5500	86	5150	87	4810	96 107	38	79	6540	82	5430	83	5090	84	4760	84	4450	94 105																

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS									
VENR = 155 KIAS										VENR = 155 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	
-35	90 6080	90 4610	90 4200	90 3820	90 3460	96 109				-35	90 6070	90 4620	90 4210	90 3830	90 3480	96 110			
-30	89 6040	89 4590	89 4180	89 3800	89 3440	94 107				-30	89 6040	89 4600	89 4190	89 3810	89 3460	95 108			
-25	88 6010	88 4560	88 4150	88 3770	88 3420	93 106				-25	88 6000	88 4570	88 4160	88 3790	88 3440	94 107			
-20	86 5970	86 4530	86 4130	86 3750	86 3400	93 105				-20	87 5950	87 4540	87 4130	87 3760	87 3410	92 105			
-15	85 5930	85 4510	85 4100	85 3730	85 3380	93 105				-15	85 5910	85 4510	85 4110	85 3730	85 3390	91 104			
-10	84 5890	84 4470	84 4070	84 3700	84 3360	93 105				-10	84 5870	84 4470	84 4070	84 3700	84 3360	91 103			
-5	83 5840	83 4440	83 4040	83 3670	83 3330	93 105				-5	83 5810	83 4430	83 4040	83 3670	83 3330	91 103			
0	81 5780	81 4390	81 4000	81 3630	81 3290	92 104				0	82 5750	82 4380	82 3990	82 3630	82 3290	91 103			
5	80 5670	80 4310	80 3920	80 3560	80 3230	92 104				5	80 5640	80 4300	80 3920	80 3560	80 3230	90 102			
10	78 5570	78 4230	78 3850	78 3500	78 3170	92 103				10	78 5540	78 4220	78 3840	78 3490	78 3160	90 102			
15	76 5450	76 4140	76 3760	76 3410	77 3150	92 103				15	77 5410	77 4120	77 3750	77 3400	77 3080	90 101			
20	75 5320	75 4080	76 3820	77 3560	78 3320	92 103				20	75 5280	75 4010	75 3650	75 3310	76 3070	90 101			
25	73 5190	76 4310	77 4040	78 3770	79 3520	92 103				25	73 5140	74 3980	75 3730	76 3480	77 3240	90 101			
30	74 5500	77 4560	78 4270	79 3990	80 3720	92 103				30	71 5090	75 4220	76 3950	77 3690	78 3440	90 101			
35	75 5840	79 4840	80 4540	80 4240	81 3950	92 103				35	73 5400	76 4470	77 4190	78 3910	79 3640	90 101			
38	76 6050	79 5020	80 4710	81 4400	82 4100	92 103				38	74 5590	77 4640	78 4340	79 4050	79 3780	90 101			

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS									
VENR = 154 KIAS										VENR = 153 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS		
			V1	DIST	V1	DIST	V1	DIST					V1	DIST	V1	DIST	V1	DIST	
			KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	
-35	91 6080	91 4640	91 4240	91 3860	91 3510	97 111			-35	91 6100	91 4680	91 4270	91 3890	91 3540	98 112				
-30	89 6040	89 4610	89 4210	89 3830	89 3480	96 109			-30	90 6050	90 4640	90 4240	90 3860	90 3510	96 111				
-25	88 5990	88 4580	88 4180	88 3800	88 3460	94 108			-25	88 6000	88 4600	88 4200	88 3830	88 3480	95 109				
-20	87 5950	87 4550	87 4150	87 3780	87 3430	93 106			-20	87 5950	87 4570	87 4170	87 3800	87 3460	93 107				
-15	86 5900	86 4510	86 4120	86 3750	86 3400	91 105			-15	86 5900	86 4530	86 4130	86 3770	86 3430	92 106				
-10	85 5850	85 4470	85 4080	85 3710	85 3370	90 103			-10	85 5850	85 4490	85 4100	85 3730	85 3390	91 104				
-5	83 5790	83 4430	83 4040	83 3680	83 3340	89 102			-5	84 5790	84 4440	84 4050	84 3690	84 3350	89 103				
0	82 5730	82 4380	82 3990	82 3630	82 3300	88 101			0	82 5710	82 4380	82 4000	82 3640	82 3310	87 101				
5	80 5620	80 4290	80 3910	80 3560	80 3230	88 101			5	81 5600	81 4290	81 3920	81 3570	81 3240	86 99				
10	79 5510	79 4210	79 3830	79 3490	79 3160	88 100			10	79 5490	79 4200	79 3830	79 3490	79 3170	86 99				
15	77 5370	77 4100	77 3740	77 3400	77 3080	88 100			15	77 5350	77 4090	77 3730	77 3390	77 3080	86 98				
20	75 5240	75 4000	75 3640	75 3300	75 2990	88 99			20	75 5210	75 3980	75 3630	75 3300	75 2990	86 98				
25	73 5100	73 3890	73 3540	73 3210	74 2980	88 99			25	73 5070	73 3870	73 3520	73 3200	73 2900	86 97				
30	71 4960	72 3890	73 3640	74 3390	75 3160	88 99			30	71 4920	71 3760	71 3420	71 3110	72 2890	86 97				
35	70 4980	73 4120	74 3860	75 3600	76 3350	88 99			35	69 4790	71 3780	72 3540	73 3300	74 3070	86 97				
38	71 5160	74 4270	75 4000	76 3730	77 3470	88 99			38	68 4740	71 3920	72 3660	73 3420	74 3180	86 97				

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 9000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 160 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS		TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2 KIAS							
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT							
-35	86	6340	86	4700	86	4260	87	3980	89	3720	107	117	-35	86	6300	86	4680	86	4230	86	3840	88	3580	105	116
-30	85	6330	85	4730	87	4430	88	4150	89	3880	107	117	-30	85	6290	85	4680	85	4270	87	4000	88	3730	105	116
-25	84	6320	86	4920	87	4620	88	4320	90	4040	107	116	-25	84	6280	84	4740	86	4450	87	4160	89	3890	105	115
-20	83	6300	86	5120	88	4810	89	4500	90	4210	106	116	-20	83	6260	85	4940	86	4630	88	4340	89	4050	105	115
-15	82	6390	87	5330	88	5000	89	4690	91	4380	106	116	-15	82	6250	86	5140	87	4820	88	4510	89	4220	105	115
-10	83	6660	87	5560	89	5220	90	4890	91	4570	106	116	-10	82	6410	86	5350	87	5020	89	4710	90	4400	105	115
-5	83	6940	88	5800	89	5440	90	5100	92	4770	106	116	-5	82	6690	87	5580	88	5240	89	4910	90	4590	105	115
0	84	7260	88	6070	90	5700	91	5340	92	5000	106	116	0	83	6990	87	5840	89	5480	90	5140	91	4810	105	115
5	85	7630	89	6370	91	5980	92	5610	93	5250	106	116	5	84	7330	88	6130	89	5750	91	5390	92	5050	105	115
10	86	8040	90	6710	91	6310	93	5910	94	5540	106	116	10	85	7720	89	6450	90	6060	91	5680	92	5320	105	115
15	87	8530	91	7120	92	6690	93	6270	95	5870	106	116	15	86	8190	90	6840	91	6420	92	6020	93	5640	105	115
20	88	9070	92	7570	93	7110	94	6670	96	6240	106	116	20	87	8700	91	7270	92	6820	93	6400	94	5990	105	115
25	89	9590	93	8080	94	7590	96	7110	97	6660	106	116	25	88	9290	92	7750	93	7270	94	6820	95	6390	105	115
26	90	9820	94	8190	95	7690	96	7210	97	6750	106	116	28	89	9670	93	8060	94	7570	95	7090	96	6640	105	115
28	90	10100	94	8410	95	7900	96	7400	97	6930	106	116	30	90	9950	93	8290	94	7780	95	7290	96	6820	105	115
													31	90	10080	94	8400	95	7880	96	7390	97	6920	105	115

WEIGHT = 15500 LBS										VENR = 159 KIAS										WEIGHT = 15000 LBS										VENR = 158 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								VR V2 KIAS												
	10 KTS				10 KTS	20 KTS	30 KTS					10 KTS						10 KTS	20 KTS	30 KTS																			
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST													
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT													
-35	86	6240	86	4650	86	4210	86	3810	86	3440	104	114	-35	87	6190	87	4630	87	4190	87	3790	87	3430	102	112														
-30	85	6230	85	4650	85	4210	85	3800	86	3500	104	114	-30	85	6170	85	4620	85	4190	85	3790	85	3420	102	112														
-25	84	6210	84	4640	84	4200	85	3910	86	3650	104	114	-25	84	6160	84	4610	84	4180	84	3780	84	3420	102	112														
-20	83	6200	83	4630	84	4340	86	4070	87	3800	104	114	-20	83	6140	83	4600	83	4170	83	3810	85	3560	102	112														
-15	82	6180	84	4820	85	4520	86	4240	87	3960	104	114	-15	82	6120	82	4590	83	4240	84	3960	85	3700	102	112														
-10	81	6150	84	5020	85	4710	87	4420	88	4120	104	114	-10	81	6090	82	4700	83	4410	85	4130	86	3860	102	112														
-5	80	6270	85	5240	86	4910	87	4600	88	4300	104	114	-5	80	6060	83	4900	84	4600	85	4310	86	4030	102	112														
0	81	6560	85	5470	87	5140	88	4810	89	4500	104	114	0	79	6140	83	5130	85	4800	86	4500	87	4210	102	112														
5	82	6870	86	5740	87	5390	88	5050	90	4720	104	114	5	80	6430	84	5370	85	5040	87	4720	88	4410	102	112														
10	83	7230	87	6040	88	5670	89	5310	91	4970	104	114	10	81	6760	85	5640	86	5290	87	4960	88	4640	102	112														
15	84	7650	88	6390	89	6000	90	5620	91	5260	104	114	15	82	7140	86	5970	87	5600	88	5250	89	4910	102	112														
20	85	8120	89	6780	90	6370	91	5970	92	5590	104	114	20	83	7570	87	6320	88	5940	89	5560	90	5210	102	112														
25	87	8650	90	7220	91	6780	92	6360	93	5950	104	114	25	85	8060	88	6720	89	6310	90	5920	91	5540	102	112														
30	88	9250	91	7710	93	7240	93	6790	94	6350	103	114	30	86	8600	89	7170	90	6730	91	6310	92	5900	102	112														
31	88	9380	92	7810	93	7330	94	6870	95	6440	103	114	35	87	9190	91	7660	92	7190	92	6740	93	6300	102	112														
35	89	9900	93	8250	94	7740	95	7250	95	6790	103	114	36	88	9320	91	7760	92	7280	93	6830	94	6390	102	112														

WEIGHT = 14500 LBS										VENR = 157 KIAS										WEIGHT = 14000 LBS										VENR = 157 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								VR	V2										
					10 KTS		20 KTS		30 KTS		10 KTS									20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-35	87	6140	87	4600	87	4180	87	3780	87	3420	100	111	-35	87	6100	87	4590	87	4160	87	3770	87	3410	98	110														
-30	86	6120	86	4590	86	4170	86	3770	86	3410	100	111	-30	86	6080	86	4570	86	4150	86	3760	86	3410	98	110														
-25	84	6100	84	4580	84	4160	84	3760	84	3400	100	111	-25	85	6060	85	4560	85	4140	85	3750	85	3390	98	109														
-20	83	6080	83	4570	83	4150	83	3750	83	3390	100	110	-20	84	6030	84	4550	84	4130	84	3740	84	3380	98	109														
-15	82	6060	82	4550	82	4130	82	3740	83	3460	100	110	-15	82	6010	82	4530	82	4110	82	3730	82	3370	98	109														
-10	81	6030	81	4530	81	4130	82	3860	84	3610	100	110	-10	81	5970	81	4500	81	4090	81	3710	81	3360	98	109														
-5	80	5990	81	4580	82	4300	83	4020	84	3760	100	110	-5	80	5940	80	4480	80	4070	81	3750	82	3500	98	109														
0	79	5940	81	4790	82	4490	84	4210	85	3930	100	110	0	79	5880	79	4470	80	4190	81	3920	83	3660	98	109														
5	78	6010	82	5020	83	4700	84	4400	86	4120	100	110	5	77	5810	80	4680	81	4390	82	4110	83	3840	98	109														
10	79	6320	83	5270	84	4940	85	4630	86	4330	100	110	10	77	5890	81	4910	82	4610	83	4310	84	4030	98	109														
15	80	6670	84	5560	85	5220	86	4890	87	4570	100	110	15	78	6220	82	5180	83	4860	84	4550	85	4260	98	108														
20	81	7060	85	5890	86	5530	87	5180	88	4840	100	110	20	79	6570	83	5480	84	5140	85	4820	86	4500	98	108														
25	83	7500	86	6260	87	5870	88	5500	89	5150	100	110	25	81	6980	84	5820	85	5460	86	5110	87	4780	98	108														
30	84	7990	87	6670	88	6260	89	5860	90	5480	100	110	30	82	7420	85	6190	86	5810	87	5440	88	5090	98	108														
35	85	8530	88	7110	89	6670	90	6250	91	5850	100	110	35	83	7910	86	6590	87	6180	88	5790	89	5420	98	108														
36	85	8640	89	7200	90	6760	91	6330	91	5920	100	110	36	83	8010	87	6680	88	6260	88	5870	89	5490	98	108														

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
9000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 156 KIAS										WEIGHT = 13000 LBS										VENR = 155 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																			
-35	87	6060	87	4570	87	4160	87	3770	87	3410	97 109	-35	87	6030	87	4570	87	4150	87	3770	87	3420	95 107																
-30	86	6040	86	4560	86	4140	86	3760	86	3400	96 108	-30	86	6010	86	4550	86	4140	86	3760	86	3400	95 107																
-25	85	6010	85	4540	85	4130	85	3740	85	3390	96 108	-25	85	5980	85	4530	85	4120	85	3740	85	3390	95 107																
-20	84	5990	84	4530	84	4110	84	3730	84	3380	96 108	-20	84	5950	84	4510	84	4100	84	3730	84	3370	95 106																
-15	83	5960	83	4510	83	4100	83	3710	83	3360	96 107	-15	83	5920	83	4490	83	4080	83	3710	83	3360	94 106																
-10	81	5930	81	4480	81	4070	81	3690	81	3340	96 107	-10	82	5880	82	4460	82	4060	82	3680	82	3340	94 106																
-5	80	5890	80	4450	80	4050	80	3670	80	3320	96 107	-5	80	5840	80	4430	80	4030	80	3660	80	3310	94 105																
0	79	5820	79	4410	79	4000	79	3650	80	3410	96 107	0	79	5780	79	4380	79	3980	79	3620	79	3270	94 105																
5	77	5750	78	4360	79	4080	80	3820	81	3570	96 107	5	78	5700	78	4320	78	3930	78	3570	79	3310	94 105																
10	76	5660	78	4570	80	4290	81	4010	82	3750	96 107	10	76	5610	76	4250	77	3980	78	3720	79	3480	94 105																
15	76	5790	80	4830	81	4520	82	4230	83	3950	96 107	15	74	5490	77	4480	78	4200	79	3930	80	3670	94 105																
20	77	6120	81	5100	82	4780	83	4470	84	4180	96 107	20	75	5680	78	4740	79	4430	80	4150	81	3870	94 105																
25	78	6480	82	5400	83	5070	84	4740	85	4430	96 107	25	76	6020	79	5010	80	4700	81	4390	82	4100	94 105																
30	80	6890	83	5740	84	5380	85	5040	86	4710	96 107	30	77	6390	81	5320	82	4980	83	4660	83	4360	94 105																
35	81	7330	84	6110	85	5730	86	5360	87	5010	96 107	35	79	6790	82	5650	83	5300	84	4960	84	4630	94 105																
36	81	7420	84	6180	85	5800	86	5430	87	5080	96 107	36	79	6870	82	5720	83	5360	84	5020	85	4690	94 105																

WEIGHT = 12500 LBS										VENR = 154 KIAS										WEIGHT = 12000 LBS										VENR = 153 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-35	88	6010	88	4570	88	4160	88	3780	88	3430	93	106	-35	88	6000	88	4570	88	4170	88	3790	88	3440	94	107														
-30	87	5990	87	4550	87	4140	87	3760	87	3410	93	105	-30	87	5970	87	4550	87	4150	87	3770	87	3420	92	106														
-25	85	5950	85	4520	85	4120	85	3740	85	3390	93	105	-25	86	5940	86	4520	86	4120	86	3750	86	3400	91	104														
-20	84	5920	84	4500	84	4100	84	3720	84	3380	93	105	-20	85	5900	85	4500	85	4100	85	3730	85	3380	91	103														
-15	83	5890	83	4480	83	4080	83	3700	83	3360	93	105	-15	83	5860	83	4470	83	4070	83	3700	83	3360	91	103														
-10	82	5850	82	4450	82	4050	82	3680	82	3330	93	104	-10	82	5820	82	4440	82	4040	82	3680	82	3340	91	103														
-5	81	5800	81	4410	81	4020	81	3650	81	3310	92	104	-5	81	5770	81	4400	81	4010	81	3640	81	3310	90	103														
0	79	5730	79	4360	79	3970	79	3610	79	3270	92	104	0	80	5700	80	4350	80	3960	80	3600	80	3260	90	102														
5	78	5650	78	4300	78	3910	78	3550	78	3220	92	103	5	78	5620	78	4280	78	3900	78	3540	78	3210	90	102														
10	76	5560	76	4230	76	3840	76	3490	77	3220	92	103	10	77	5520	77	4210	77	3830	77	3480	77	3150	90	101														
15	75	5440	75	4150	76	3890	77	3640	78	3390	92	103	15	75	5390	75	4110	75	3740	75	3390	75	3130	90	101														
20	73	5320	76	4380	77	4110	78	3840	79	3580	92	103	20	73	5270	73	4060	74	3790	75	3550	76	3310	90	101														
25	74	5580	77	4640	78	4350	79	4060	80	3790	92	103	25	71	5160	74	4290	76	4020	77	3750	78	3500	90	101														
30	75	5910	78	4920	79	4610	80	4310	81	4020	92	103	30	73	5470	76	4550	77	4250	78	3970	79	3710	90	101														
35	76	6280	79	5220	80	4890	81	4580	82	4270	92	103	35	74	5800	77	4810	78	4510	79	4220	80	3930	90	101														
36	77	6350	80	5280	81	4950	81	4630	82	4320	92	103	36	74	5870	77	4870	78	4560	79	4270	80	3980	90	101														

WEIGHT = 11500 LBS										VENR = 153 KIAS										WEIGHT = 11000 LBS										VENR = 152 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST			V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	88	6000	88	4590	88	4180	88	3810	88	3460	94 108	-35	89	6010	89	4610	89	4210	89	3840	89	3490	95 109																
-30	87	5970	87	4560	87	4160	87	3790	87	3440	93 107	-30	87	5970	87	4580	87	4180	87	3810	87	3470	94 108																
-25	86	5930	86	4530	86	4130	86	3760	86	3420	92 105	-25	86	5930	86	4550	86	4150	86	3780	86	3440	92 106																
-20	85	5890	85	4500	85	4110	85	3740	85	3400	90 104	-20	85	5890	85	4520	85	4120	85	3760	85	3420	91 105																
-15	84	5850	84	4470	84	4080	84	3710	84	3370	89 102	-15	84	5840	84	4480	84	4090	84	3730	84	3390	90 103																
-10	82	5800	82	4430	82	4040	82	3680	82	3340	88 101	-10	83	5790	83	4440	83	4050	83	3690	83	3360	88 101																
-5	81	5740	81	4390	81	4010	81	3650	81	3310	88 101	-5	81	5730	81	4400	81	4010	81	3660	81	3320	87 100																
0	80	5670	80	4340	80	3960	80	3600	80	3270	88 101	0	80	5650	80	4340	80	3960	80	3600	80	3270	86 99																
5	78	5580	78	4270	78	3890	78	3540	78	3210	88 100	5	79	5560	79	4270	79	3890	79	3540	79	3220	86 99																
10	77	5480	77	4190	77	3820	77	3470	77	3150	88 100	10	77	5460	77	4180	77	3810	77	3470	77	3150	86 98																
15	75	5350	75	4090	75	3720	75	3380	75	3070	88 99	15	75	5320	75	4080	75	3720	75	3380	75	3060	86 98																
20	73	5230	73	3990	73	3630	73	3300	74	3040	88 99	20	73	5190	73	3970	73	3620	73	3290	73	2980	86 97																
25	71	5090	72	3950	73	3700	74	3450	75	3220	88 99	25	71	5050	71	3860	71	3510	71	3190	72	2950	86 97																
30	70	5050	73	4180	74	3920	75	3660	76	3410	88 99	30	69	4920	70	3840	71	3590	72	3350	73	3120	86 97																
35	71	5350	74	4430	75	4150	76	3870	77	3610	88 99	35	68	4910	72	4070	72	3800	73	3550	74	3310	86 97																
36	72	5410	75	4480	75	4200	76	3920	77	3650	88 99	36	69	4970	72	4110	73	3850	74	3590	75	3350	86 97																

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 10,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
VENR = 159 KIAS										VENR = 159 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-35	84 6310	86 4900	87 4600	88 4300	90 4020	107	116			-35	84 6270	84 4720	86 4430	87 4140	88 3870	105	115		
-30	83 6310	86 5100	88 4790	89 4490	90 4190	106	116			-30	83 6270	85 4910	86 4610	88 4320	89 4040	105	115		
-25	82 6360	87 5320	88 4980	89 4670	91 4360	106	116			-25	82 6260	85 5120	87 4800	88 4490	89 4200	105	115		
-20	83 6630	87 5530	88 5190	90 4860	91 4550	106	116			-20	82 6380	86 5320	87 5000	89 4680	90 4380	105	115		
-15	83 6900	88 5760	89 5410	90 5070	91 4740	106	116			-15	82 6640	86 5550	88 5210	89 4880	90 4560	105	115		
-10	84 7190	88 6010	89 5640	91 5290	92 4950	106	116			-10	83 6920	87 5780	88 5430	90 5090	91 4760	105	115		
-5	84 7500	89 6270	90 5890	91 5530	92 5180	106	116			-5	83 7220	88 6030	89 5670	90 5310	91 4980	105	115		
0	85 7850	89 6570	91 6170	92 5790	93 5420	106	116			0	84 7550	88 6320	89 5930	91 5560	92 5210	105	115		
5	86 8230	90 6890	91 6470	92 6070	94 5690	106	116			5	85 7910	89 6620	90 6220	91 5830	92 5460	105	115		
10	87 8700	91 7280	92 6840	93 6420	94 6010	106	116			10	86 8360	90 6990	91 6570	92 6160	93 5770	105	115		
15	88 9250	92 7730	93 7260	94 6810	95 6380	106	116			15	87 8870	91 7420	92 6970	93 6540	94 6120	105	115		
20	89 9860	93 8230	94 7730	95 7250	96 6800	106	116			20	88 9450	92 7890	93 7410	94 6960	95 6520	105	115		
21	89 9990	93 8340	94 7840	95 7350	96 6880	106	116			23	89 9830	93 8210	94 7710	95 7230	96 6770	105	115		
23		94 8570	95 8050	96 7550	97 7070	106	116			25	89 10110	93 8430	94 7920	95 7430	96 6960	105	115		
										27		93 8670	95 8140	96 7630	97 7150	105	115		

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 158 KIAS										VENR = 157 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-35	84 6210	84 4640	84 4200	85 3890	86 3630	104	114			-35	84 6150	84 4610	84 4180	84 3780	84 3410	102	112		
-30	83 6210	83 4630	84 4330	86 4050	87 3780	104	114			-30	83 6150	83 4600	83 4170	83 3790	85 3540	102	112		
-25	82 6200	83 4800	85 4500	86 4220	87 3940	104	114			-25	82 6130	82 4600	83 4220	84 3950	85 3690	102	112		
-20	81 6190	84 5000	85 4690	87 4390	88 4100	104	114			-20	81 6120	82 4680	83 4390	84 4110	86 3840	102	112		
-15	80 6230	85 5200	86 4880	87 4570	88 4270	104	114			-15	80 6100	82 4870	84 4570	85 4280	86 4000	102	112		
-10	81 6490	85 5420	86 5090	88 4770	89 4460	104	114			-10	79 6080	83 5080	84 4770	85 4460	87 4170	102	112		
-5	81 6760	86 5650	87 5310	88 4970	89 4650	104	114			-5	80 6330	84 5290	85 4960	86 4650	87 4350	102	112		
0	82 7070	86 5910	87 5550	89 5200	90 4870	104	114			0	80 6620	84 5530	85 5190	87 4860	88 4550	102	112		
5	83 7400	87 6190	88 5810	89 5450	90 5100	104	114			5	81 6910	85 5780	86 5430	87 5090	88 4760	102	112		
10	84 7810	88 6530	89 6130	90 5750	91 5390	104	114			10	82 7290	86 6090	87 5720	88 5370	89 5020	102	112		
15	85 8280	89 6920	90 6500	91 6100	92 5710	104	114			15	83 7720	87 6450	88 6060	89 5680	90 5320	102	112		
20	86 8800	90 7360	91 6910	92 6480	93 6070	104	114			20	84 8200	88 6850	89 6430	90 6030	91 5650	102	112		
25	87 9400	91 7840	92 7370	93 6910	94 6470	104	114			25	86 8730	89 7300	90 6850	91 6430	92 6020	102	112		
27	88 9650	92 8060	93 7570	94 7100	95 6640	103	114			30	87 9330	90 7790	91 7310	92 6860	93 6420	102	112		
30	89 10060	92 8390	93 7870	94 7380	95 6910	103	114			31	87 9460	90 7890	91 7410	92 6940	93 6500	102	112		
31		92 8500	93 7980	94 7480	95 7010	103	114			34	88 9850	91 8210	92 7710	93 7230	94 6760	102	112		

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
VENR = 156 KIAS										VENR = 156 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT								10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT				
-35	85 6100	85 4580	85 4160	85 3760	85 3400	100	111			-35	85 6060	85 4560	85 4140	85 3750	85 3390	98	109		
-30	83 6090	83 4570	83 4150	83 3760	83 3400	100	110			-30	84 6040	84 4550	84 4130	84 3750	84 3390	98	109		
-25	82 6080	82 4570	82 4140	82 3750	83 3450	100	110			-25	83 6020	83 4540	83 4120	83 3740	83 3380	98	109		
-20	81 6060	81 4560	81 4140	82 3840	83 3590	100	110			-20	81 6010	81 4530	81 4110	81 3730	81 3370	98	109		
-15	80 6040	80 4560	82 4270	83 4000	84 3740	100	110			-15	80 5980	80 4510	80 4100	80 3730	82 3480	98	109		
-10	79 6010	81 4740	82 4450	83 4170	85 3900	100	110			-10	79 5950	79 4490	80 4150	81 3890	82 3630	98	109		
-5	78 5980	81 4940	83 4640	84 4350	85 4060	100	110			-5	78 5920	79 4610	80 4330	82 4050	83 3790	98	109		
0	78 6180	82 5160	83 4840	85 4540	86 4240	100	110			0	77 5870	80 4820	81 4520	82 4230	83 3960	98	109		
5	79 6460	83 5390	84 5060	85 4750	86 4440	100	110			5	77 6030	81 5030	82 4720	83 4420	84 4130	98	109		
10	80 6800	84 5680	85 5330	86 5000	87 4680	100	110			10	78 6340	82 5290	83 4970	84 4650	85 4350	98	108		
15	81 7190	85 6010	86 5640	87 5290	88 4950	100	110			15	79 6700	83 5590	84 5250	85 4920	86 4600	98	108		
20	82 7630	86 6370	87 5980	88 5610	89 5250	100	110			20	80 7090	84 5920	85 5560	86 5210	87 4880	98	108		
25	84 8120	87 6780	88 6370	89 5970	90 5590	100	110			25	81 7540	85 6290	86 5910	87 5540	88 5180	98	108		
30	85 8660	88 7230	89 6790	90 6360	91 5950	100	110			30	83 8030	86 6700	87 6290	88 5900	89 5520	98	108		
34	86 9120	89 7610	90 7150	91 6700	92 6270	100	110			34	84 8450	87 7050	88 6620	89 6200	90 5800	98	108		

Figure 7-2 (Sheet 21 of 30)

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
10,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 155 KIAS										WEIGHT = 13000 LBS										VENR = 154 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2																		
	10 KTS			20 KTS		30 KTS		10 KTS				20 KTS			30 KTS		10 KTS		20 KTS			30 KTS																	
	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT			V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT		V1 KIAS	DIST FT																
-35	85	6010	85	4540	85	4130	85	3740	85	3390	96	108	-35	85	5980	85	4530	85	4120	85	3740	85	3390	95	107														
-30	84	6000	84	4530	84	4120	84	3740	84	3380	96	108	-30	84	5960	84	4520	84	4110	84	3730	84	3380	95	106														
-25	83	5980	83	4520	83	4110	83	3730	83	3370	96	107	-25	83	5940	83	4500	83	4090	83	3720	83	3370	94	106														
-20	82	5960	82	4510	82	4090	82	3710	82	3360	96	107	-20	82	5910	82	4490	82	4080	82	3700	82	3360	94	106														
-15	81	5930	81	4490	81	4080	81	3700	81	3350	96	107	-15	81	5890	81	4470	81	4060	81	3690	81	3340	94	106														
-10	79	5900	79	4460	79	4060	79	3680	80	3380	96	107	-10	80	5850	80	4440	80	4040	80	3670	80	3320	94	105														
-5	78	5860	78	4440	78	4030	79	3770	80	3520	96	107	-5	78	5810	78	4410	78	4010	78	3640	78	3300	94	105														
0	77	5810	78	4480	79	4210	80	3940	81	3680	96	107	0	77	5760	77	4370	77	3980	78	3660	79	3410	94	105														
5	76	5760	78	4480	80	4390	81	4110	82	3850	96	107	5	76	5700	76	4350	77	4080	78	3820	79	3560	94	105														
10	76	5900	79	4930	80	4620	82	4330	83	4040	96	107	10	74	5600	77	4570	78	4290	79	4020	80	3750	94	105														
15	77	6240	80	5200	81	4880	83	4570	84	4270	96	107	15	75	5790	78	4830	79	4520	80	4230	81	3960	94	105														
20	78	6590	81	5500	83	5160	84	4830	85	4520	96	107	20	76	6120	79	5100	80	4780	81	4480	82	4180	94	105														
25	79	6990	83	5840	84	5480	85	5130	86	4800	96	107	25	77	6480	80	5400	81	5070	82	4750	83	4440	94	105														
30	81	7440	84	6200	85	5820	86	5460	87	5100	96	107	30	78	6880	81	5740	82	5390	83	5040	84	4710	94	105														
34	82	7820	85	6520	86	6120	86	5730	87	5360	96	107	34	79	7230	82	6030	83	5650	84	5300	85	4950	94	105														

WEIGHT = 12500 LBS										VENR = 153 KIAS										WEIGHT = 12000 LBS										VENR = 152 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2																		
	10 KTS			20 KTS		30 KTS		10 KTS				20 KTS			30 KTS																								
	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT			V1 KIAS	DIST FT		V1 KIAS	DIST FT																							
-35	86	5950	86	4520	86	4120	86	3740	86	3390	93	105	-35	86	5940	86	4520	86	4120	86	3750	86	3400	91	104														
-30	84	5930	84	4510	84	4100	84	3730	84	3380	93	105	-30	85	5910	85	4510	85	4110	85	3730	85	3390	91	104														
-25	83	5910	83	4490	83	4090	83	3710	83	3370	93	105	-25	84	5880	84	4480	84	4090	84	3720	84	3370	91	103														
-20	82	5880	82	4470	82	4070	82	3700	82	3350	93	104	-20	82	5850	82	4460	82	4070	82	3700	82	3360	91	103														
-15	81	5850	81	4450	81	4050	81	3680	81	3340	92	104	-15	81	5820	81	4440	81	4040	81	3680	81	3340	90	103														
-10	80	5810	80	4420	80	4020	80	3660	80	3310	92	104	-10	80	5770	80	4410	80	4010	80	3650	80	3310	90	102														
-5	79	5770	79	4390	79	4000	79	3630	79	3290	92	104	-5	79	5730	79	4370	79	3980	79	3620	79	3290	90	102														
0	77	5710	77	4350	77	3960	77	3590	77	3260	92	103	0	78	5670	78	4330	78	3940	78	3580	78	3250	90	102														
5	76	5650	76	4300	76	3910	76	3550	77	3300	92	103	5	76	5610	76	4280	76	3900	76	3540	76	3210	90	101														
10	74	5550	75	4240	76	3970	77	3720	78	3470	92	103	10	75	5500	75	4200	75	3820	75	3470	75	3200	90	101														
15	73	5440	76	4470	77	4190	78	3920	79	3660	92	103	15	73	5390	73	4130	74	3870	75	3620	76	3380	90	101														
20	73	5670	77	4730	78	4420	79	4140	80	3870	92	103	20	71	5270	74	4360	75	4090	76	3820	77	3570	90	101														
25	75	6000	78	5000	79	4690	80	4390	81	4100	92	103	25	72	5550	75	4620	76	4320	77	4040	78	3770	90	101														
30	76	6370	79	5300	80	4970	81	4650	82	4350	92	103	30	73	5880	77	4890	78	4580	78	4290	79	4000	90	101														
34	77	6680	80	5560	81	5220	82	4880	83	4560	92	103	34	75	6160	77	5130	78	4800	79	4490	80	4200	90	101														

WEIGHT = 11500 LBS										VENR = 151 KIAS										WEIGHT = 11000 LBS										VENR = 151 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2																		
	10 KTS			20 KTS		30 KTS		10 KTS				20 KTS			30 KTS																								
	V1	DIST		V1	DIST	V1	DIST	V1	DIST			V1	DIST		V1	DIST	V1	DIST	V1	DIST																			
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT																
-35	86	5930	86	4530	86	4130	86	3760	86	3420	92	105	-35	86	5930	86	4550	86	4150	86	3780	86	3440	92	106														
-30	85	5900	85	4510	85	4110	85	3740	85	3400	90	104	-30	85	5900	85	4520	85	4130	85	3760	85	3420	91	105														
-25	84	5870	84	4490	84	4090	84	3720	84	3380	89	102	-25	84	5860	84	4500	84	4100	84	3740	84	3400	90	103														
-20	83	5830	83	4460	83	4070	83	3700	83	3360	89	102	-20	83	5820	83	4470	83	4080	83	3720	83	3380	88	102														
-15	82	5790	82	4430	82	4040	82	3680	82	3340	88	101	-15	82	5780	82	4440	82	4050	82	3690	82	3350	87	100														
-10	80	5750	80	4400	80	4010	80	3650	80	3310	88	101	-10	81	5730	81	4400	81	4010	81	3660	81	3320	86	99														
-5	79	5700	79	4360	79	3980	79	3620	79	3290	88	101	-5	79	5680	79	4360	79	3980	79	3620	79	3290	86	99														
0	78	5640	78	4310	78	3930	78	3580	78	3250	88	100	0	78	5610	78	4310	78	3930	78	3580	78	3250	86	99														
5	77	5570	77	4260	77	3880	77	3530	77	3210	88	100	5	77	5540	77	4250	77	3880	77	3530	77	3210	86	98														
10	75	5460	75	4180	75	3810	75	3460	75	3140	88	100	10	75	5430	75	4160	75	3800	75	3450	75	3130	86	98														
15	73	5340	73	4080	73	3720	73	3380	74	3110	88	99	15	73	5300	73	4060	73	3700	73	3370	73	3050	86	97														
20	71	5220	72	4020	73	3760	74	3520	75	3280	88	99	20	71	5180	71	3960	71	3610	71	3280	72	3000	86	97														
25	70	5120	73	4250	74	3980	75	3720	76	3470	88	99	25	70	5050	70	3900	71	3650	72	3410	73	3170	86	97														
30	71	5420	74	4510	75	4210	76	3940	77	3670	88	99	30	68	4980	71	4130	72	3860	73	3610	74	3360	86	97														
34	72	5670	75	4710	76	4410	77	4130	78	3850	88	99	34	69	5210	72	4320	73	4050	74	3780	75	3520	86	97														

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 11,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 159 KIAS										WEIGHT = 16000 LBS										VENR = 158 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S												
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	82	6340	87	5290	88	4960	89	4650	91	4340	106	116	-35	82	6260	85	5090	87	4780	88	4480	89	4180	105	115	-35	82	6260	85	5090	87	4780	88	4480	89	4180	105	115	
-30	83	6600	87	5510	88	5170	90	4840	91	4530	106	116	-30	81	6350	86	5310	87	4980	88	4660	90	4360	105	115	-30	81	6350	86	5310	87	4980	88	4660	90	4360	105	115	
-25	83	6870	87	5740	89	5390	90	5050	91	4720	106	116	-25	82	6610	86	5520	88	5180	89	4860	90	4540	105	115	-25	82	6610	86	5520	88	5180	89	4860	90	4540	105	115	
-20	84	7150	88	5980	89	5620	91	5270	92	4930	106	116	-20	83	6880	87	5750	88	5400	89	5070	91	4740	105	115	-20	83	6880	87	5750	88	5400	89	5070	91	4740	105	115	
-15	84	7460	88	6240	90	5860	91	5500	92	5150	106	116	-15	83	7170	87	6000	89	5630	90	5280	91	4950	105	115	-15	83	7170	87	6000	89	5630	90	5280	91	4950	105	115	
-10	85	7780	89	6510	90	6120	91	5740	93	5370	106	116	-10	84	7480	88	6260	89	5880	90	5520	91	5160	105	115	-10	84	7480	88	6260	89	5880	90	5520	91	5160	105	115	
-5	85	8120	90	6800	91	6390	92	6000	93	5620	106	116	-5	84	7810	88	6540	90	6140	91	5760	92	5400	105	115	-5	84	7810	88	6540	90	6140	91	5760	92	5400	105	115	
0	86	8500	90	7120	91	6690	93	6280	94	5880	106	116	0	85	8170	89	6840	90	6430	91	6030	93	5650	105	115	0	85	8170	89	6840	90	6430	91	6030	93	5650	105	115	
5	87	8920	91	7470	92	7020	93	6590	94	6180	106	116	5	86	8560	90	7170	91	6740	92	6330	93	5930	105	115	5	86	8560	90	7170	91	6740	92	6330	93	5930	105	115	
10	88	9460	92	7910	93	7440	94	6980	95	6550	106	116	10	87	9070	91	7590	92	7140	93	6700	94	6280	105	115	10	87	9070	91	7590	92	7140	93	6700	94	6280	105	115	
15	89	10050	93	8410	94	7900	95	7420	96	6950	106	116	15	88	9630	92	8060	93	7570	94	7110	95	6660	105	115	15	88	9630	92	8060	93	7570	94	7110	95	6660	105	115	
17			93	8620	94	8100	95	7610	96	7130	106	116	19			92	8480	94	7970	95	7480	96	7010	105	115	19			92	8480	94	7970	95	7480	96	7010	105	115	
19			93	8850	95	8320	96	7810	97	7320	106	116	20			93	8590	94	8070	95	7580	96	7100	105	115	20			93	8590	94	8070	95	7580	96	7100	105	115	
													23			93	8940	94	8400	95	7880	96	7390	105	115	23			93	8940	94	8400	95	7880	96	7390	105	115	

WEIGHT = 15500 LBS										VENR = 157 KIAS										WEIGHT = 15000 LBS										VENR = 156 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST				V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST			V1 DIST	V1 DIST																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	KIAS	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT

WEIGHT = 14500 LBS										VENR = 156 KIAS					WEIGHT = 14000 LBS										VENR = 155 KIAS																	
TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S					VR	V2	KIAS	TEMP DEG C	TAILWIND			ZERO WIND			H E A D W I N D S					VR	V2	KIAS													
	10 KTS		DIST	20 KTS		DIST	30 KTS		DIST	10 KTS						DIST	20 KTS		DIST	30 KTS		DIST	10 KTS		DIST	20 KTS				DIST	30 KTS		DIST									
	V1	DIST		V1	DIST		V1	DIST		V1	DIST						V1	DIST		V1	DIST		V1	DIST		V1					DIST	V1		DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST
	KIAS	FT		KIAS	FT		KIAS	FT		KIAS	FT						KIAS	FT		KIAS	FT		KIAS	FT		KIAS					FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	83	6080	83	4570	83	4140	83	3750	83	3430	100	110	-35	83	6030	83	4540	83	4120	83	3740	83	3380	98	109	-35	83	6030	83	4540	83	4120	83	3740	83	3380	98	109				
-30	81	6070	81	4570	81	4140	82	3830	83	3570	100	110	-30	82	6020	82	4540	82	4120	82	3740	82	3380	98	109	-30	82	6020	82	4540	82	4120	82	3740	82	3380	98	109				
-25	80	6060	80	4560	81	4250	83	3980	84	3720	100	110	-25	81	6010	81	4530	81	4110	81	3730	82	3470	98	109	-25	81	6010	81	4530	81	4110	81	3730	82	3470	98	109				
-20	79	6050	81	4720	82	4430	83	4150	84	3880	100	110	-20	79	5990	79	4520	80	4130	81	3870	82	3610	98	109	-20	79	5990	79	4520	80	4130	81	3870	82	3610	98	109				
-15	78	6030	81	4920	83	4610	84	4320	85	4040	100	110	-15	78	5970	79	4590	80	4300	81	4030	83	3760	98	109	-15	78	5970	79	4590	80	4300	81	4030	83	3760	98	109				
-10	78	6130	82	5120	83	4800	84	4500	85	4210	100	110	-10	77	5950	80	4770	81	4480	82	4200	83	3930	98	109	-10	77	5950	80	4770	81	4480	82	4200	83	3930	98	109				
-5	79	6380	82	5330	84	5010	85	4690	86	4390	100	110	-5	76	5960	80	4980	81	4670	83	4380	84	4090	98	109	-5	76	5960	80	4980	81	4670	83	4380	84	4090	98	109				
0	79	6660	83	5570	84	5230	85	4900	86	4590	100	110	0	77	6210	81	5190	82	4870	83	4560	84	4270	98	108	0	77	6210	81	5190	82	4870	83	4560	84	4270	98	108				
5	80	6960	84	5820	85	5470	86	5130	87	4800	100	110	5	78	6490	82	5420	83	5090	84	4770	85	4470	98	108	5	78	6490	82	5420	83	5090	84	4770	85	4470	98	108				
10	81	7350	85	6150	86	5780	87	5420	88	5070	100	110	10	79	6840	83	5720	84	5370	85	5040	86	4710	98	108	10	79	6840	83	5720	84	5370	85	5040	86	4710	98	108				
15	82	7770	86	6500	87	6110	88	5730	89	5370	100	110	15	80	7230	83	6040	85	5680	86	5320	87	4980	98	108	15	80	7230	83	6040	85	5680	86	5320	87	4980	98	108				
20	83	8260	87	6900	88	6490	89	6090	90	5700	100	110	20	81	7660	85	6410	86	6020	87	5650	87	5290	98	108	20	81	7660	85	6410	86	6020	87	5650	87	5290	98	108				
25	84	8790	88	7350	89	6910	90	6480	91	6070	100	110	25	82	8150	86	6810	87	6400	88	6000	88	5620	98	108	25	82	8150	86	6810	87	6400	88	6000	88	5620	98	108				
30	86	9380	89	7840	90	7360	91	6910	92	6470	100	110	30	84	8690	87	7260	88	6820	89	6390	89	5990	98	108	30	84	8690	87	7260	88	6820	89	6390	89	5990	98	108				
32	86	9640	89	8050	90	7560	91	7090	92	6640	100	110	32	84	8910	87	7450	88	6990	89	6560	90	6140	98	108	32	84	8910	87	7450	88	6990	89	6560	90	6140	98	108				

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
11,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 154 KIAS										WEIGHT = 13000 LBS										VENR = 153 KIAS									
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR KIAS	V2 KIAS	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR KIAS	V2 KIAS														
	10 KTS		WIND		10 KTS		20 KTS		30 KTS					10 KTS		WIND		10 KTS		20 KTS		30 KTS																	
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT				V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT																
-35	83	5980	83	4520	83	4110	83	3730	83	3370	96	107	-35	83	5940	83	4500	83	4100	83	3720	83	3370	94	106	-35	83	5940	83	4500	83	4100	83	3720	83	3370	94	106	
-30	82	5970	82	4510	82	4100	82	3720	82	3370	96	107	-30	82	5930	82	4490	82	4090	82	3710	82	3360	94	106	-30	82	5930	82	4490	82	4090	82	3710	82	3360	94	106	
-25	81	5950	81	4500	81	4090	81	3710	81	3360	96	107	-25	81	5910	81	4480	81	4080	81	3700	81	3350	94	106	-25	81	5910	81	4480	81	4080	81	3700	81	3350	94	106	
-20	80	5930	80	4490	80	4080	80	3700	80	3360	96	107	-20	80	5890	80	4470	80	4060	80	3690	80	3340	94	105	-20	80	5890	80	4470	80	4060	80	3690	80	3340	94	105	
-15	79	5910	79	4480	79	4070	79	3700	80	3500	96	107	-15	79	5860	79	4450	79	4050	79	3670	79	3330	94	105	-15	79	5860	79	4450	79	4050	79	3670	79	3330	94	105	
-10	77	5890	77	4460	79	4170	80	3900	81	3650	96	107	-10	78	5830	78	4430	78	4030	78	3660	78	3380	94	105	-10	78	5830	78	4430	78	4030	78	3660	78	3380	94	105	
-5	76	5850	78	4630	79	4340	80	4070	81	3800	96	107	-5	76	5800	76	4400	77	4040	78	3780	79	3530	94	105	-5	76	5800	76	4400	77	4040	78	3780	79	3530	94	105	
0	75	5810	79	4830	80	4530	81	4250	82	3970	96	107	0	75	5750	76	4490	77	4210	79	3940	80	3680	94	105	0	75	5750	76	4490	77	4210	79	3940	80	3680	94	105	
5	76	6040	79	5050	80	4730	82	4440	83	4150	96	107	5	74	5700	77	4690	78	4400	79	4120	80	3850	94	105	5	74	5700	77	4690	78	4400	79	4120	80	3850	94	105	
10	77	6370	80	5310	81	4990	82	4680	83	4370	96	107	10	74	5910	78	4940	79	4630	80	4330	81	4050	94	105	10	74	5910	78	4940	79	4630	80	4330	81	4050	94	105	
15	78	6710	81	5610	82	5270	83	4940	84	4620	96	107	15	76	6230	79	5200	80	4880	81	4570	82	4280	94	105	15	76	6230	79	5200	80	4880	81	4570	82	4280	94	105	
20	79	7110	82	5940	83	5580	84	5230	85	4900	96	107	20	77	6590	80	5500	81	5170	82	4840	83	4530	94	105	20	77	6590	80	5500	81	5170	82	4840	83	4530	94	105	
25	80	7550	83	6310	84	5930	85	5560	86	5200	96	107	25	78	6990	81	5840	82	5480	83	5140	84	4800	94	105	25	78	6990	81	5840	82	5480	83	5140	84	4800	94	105	
30	81	8030	85	6710	85	6300	86	5910	87	5530	96	107	30	79	7430	82	6200	83	5820	84	5460	85	5100	94	105	30	79	7430	82	6200	83	5820	84	5460	85	5100	94	105	
32	82	8240	85	6880	86	6460	87	6060	88	5670	96	107	32	80	7610	83	6360	84	5970	84	5590	85	5230	94	105	32	80	7610	83	6360	84	5970	84	5590	85	5230	94	105	

WEIGHT = 12500 LBS											VENR = 152 KIAS											WEIGHT = 12000 LBS											VENR = 151 KIAS										
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S						VR V2																				
	10 KTS		WIND		10 KTS	20 KTS	30 KTS		10 KTS				WIND		10 KTS	20 KTS	30 KTS																										
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																										
KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-35	83	5910	83	4490	83	4090	83	3720	83	3370	93 105	-35	84	5890	84	4490	84	4090	84	3720	84	3380	91 103																				
-30	82	5890	82	4480	82	4080	82	3710	82	3360	93 104	-30	83	5860	83	4470	83	4080	83	3710	83	3360	91 103																				
-25	81	5870	81	4470	81	4070	81	3690	81	3350	92 104	-25	81	5840	81	4450	81	4060	81	3690	81	3350	91 103																				
-20	80	5840	80	4450	80	4050	80	3680	80	3340	92 104	-20	80	5810	80	4430	80	4040	80	3670	80	3330	90 102																				
-15	79	5820	79	4430	79	4030	79	3660	79	3320	92 104	-15	79	5780	79	4410	79	4020	79	3650	79	3320	90 102																				
-10	78	5780	78	4400	78	4010	78	3640	78	3300	92 103	-10	78	5740	78	4380	78	4000	78	3630	78	3300	90 102																				
-5	77	5750	77	4380	77	3980	77	3620	77	3280	92 103	-5	77	5700	77	4350	77	3970	77	3610	77	3270	90 102																				
0	75	5700	75	4340	75	3950	76	3650	77	3410	92 103	0	76	5650	76	4320	76	3930	76	3570	76	3240	90 101																				
5	74	5650	75	4340	76	4070	77	3810	78	3560	92 103	5	74	5600	74	4270	74	3890	74	3540	75	3280	90 101																				
10	73	5540	76	4570	77	4290	78	4010	79	3750	92 103	10	73	5490	73	4230	74	3960	75	3700	76	3460	90 101																				
15	73	5770	77	4820	78	4510	79	4230	80	3950	92 103	15	71	5380	74	4450	75	4170	76	3900	77	3650	90 101																				
20	74	6100	78	5090	79	4770	80	4470	81	4180	92 103	20	72	5640	75	4700	76	4400	77	4120	78	3850	90 101																				
25	76	6460	79	5390	80	5060	81	4740	82	4430	92 103	25	73	5970	76	4970	77	4660	78	4360	79	4080	90 101																				
30	77	6860	80	5720	81	5370	82	5030	83	4700	92 103	30	74	6320	77	5270	78	4940	79	4630	80	4320	90 101																				
32	77	7030	80	5860	81	5500	82	5150	83	4820	92 103	32	75	6480	78	5400	79	5060	80	4740	80	4430	90 101																				

WEIGHT = 11500 LBS			
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TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 12,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 158 KIAS										VENR = 157 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S									
	10 KTS		10 KTS		10 KTS	20 KTS	30 KTS		10 KTS			10 KTS		10 KTS	20 KTS	30 KTS									
	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT		V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	V1 KIAS	DIST FT	VR KIAS	V2 KIAS				
-35	83	6850	87	5720	89	5370	90	5030	91	4710	106	116	-35	82	6590	86	5500	88	5170	89	4840	90	4530	105	115
-30	84	7130	88	5960	89	5590	91	5250	92	4910	106	116	-30	83	6860	87	5730	88	5380	89	5050	91	4720	105	115
-25	84	7430	88	6210	90	5840	91	5470	92	5130	106	116	-25	83	7150	87	5980	89	5610	90	5260	91	4930	105	115
-20	85	7750	89	6480	90	6090	91	5720	93	5350	106	116	-20	84	7450	88	6230	89	5860	90	5490	91	5150	105	115
-15	85	8080	89	6760	91	6360	92	5970	93	5590	106	116	-15	84	7770	88	6500	89	6110	91	5730	92	5370	105	115
-10	86	8430	90	7060	91	6640	92	6230	93	5840	106	116	-10	85	8100	89	6780	90	6380	91	5990	92	5610	105	115
-5	86	8810	90	7380	92	6940	93	6520	94	6110	106	116	-5	85	8460	89	7090	90	6660	92	6260	93	5860	105	115
0	87	9220	91	7720	92	7260	93	6820	94	6390	106	116	0	86	8850	90	7410	91	6970	92	6540	93	6140	105	115
5	87	9710	92	8130	93	7650	94	7180	95	6730	106	116	5	86	9310	90	7800	92	7340	93	6890	94	6460	105	115
10			92	8620	94	8100	95	7610	96	7140	106	116	10	87	9860	91	8260	93	7770	94	7290	95	6840	105	115
12			93	8830	94	8300	95	7790	96	7310	106	116	12			92	8670	93	8150	94	7650	95	7170	105	115
14			93	9050	94	8510	95	7990	96	7490	106	116	14			92	8780	93	8250	94	7750	95	7260	105	115
													18			93	9130	94	8580	95	8050	96	7550	105	115

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS															
VENR = 157 KIAS										VENR = 156 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS									
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2	10 KTS		V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	VR	V2						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS						
-35	80	6190	84	5160	86	4850	87	4540	88	4240	104	114	-35	80	6120	82	4830	84	4540	85	4250	86	3970	102	112
-30	81	6430	85	5370	86	5040	87	4730	89	4420	104	114	-30	79	6120	83	5030	84	4720	85	4430	86	4130	102	112
-25	81	6700	85	5600	87	5260	88	4930	89	4610	104	114	-25	79	6270	83	5240	85	4920	86	4610	87	4310	102	112
-20	82	6980	86	5830	87	5480	88	5140	89	4810	104	114	-20	80	6530	84	5460	85	5120	86	4800	87	4500	102	112
-15	82	7270	86	6080	88	5710	89	5360	90	5020	104	114	-15	80	6800	84	5680	85	5340	87	5010	88	4690	102	112
-10	83	7570	87	6340	88	5960	89	5590	90	5240	104	114	-10	81	7080	85	5920	86	5570	87	5220	88	4890	102	112
-5	83	7900	87	6620	88	6220	90	5840	91	5470	104	114	-5	81	7380	85	6180	87	5810	88	5450	89	5100	102	112
0	84	8250	88	6920	89	6500	90	6110	91	5720	104	114	0	82	7700	86	6450	87	6060	88	5690	89	5330	102	112
5	85	8680	89	7270	90	6840	91	6420	92	6020	104	114	5	83	8090	87	6780	88	6370	89	5980	90	5600	102	112
10	86	9180	89	7700	91	7240	92	6790	93	6370	104	114	10	84	8550	87	7160	89	6730	90	6320	91	5920	102	112
15	87	9750	90	8160	92	7670	93	7210	94	6760	104	114	15	85	9060	88	7590	90	7140	91	6700	92	6280	102	112
18	87	10130	91	8480	92	7970	93	7480	94	7010	103	114	20	86	9650	89	8070	91	7590	92	7130	92	6680	102	112
20			91	8700	93	8180	94	7680	94	7200	103	114	22	86	9900	90	8290	91	7790	92	7310	93	6850	102	112
22			92	8930	93	8400	94	7880	95	7390	103	114	25			91	8620	92	8100	93	7600	93	7120	102	112
													26			91	8730	92	8210	93	7700	94	7220	102	112

WEIGHT = 14500 LBS										VENR = 155 KIAS										WEIGHT = 14000 LBS										VENR = 154 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS								TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS																					
					10 KTS		20 KTS		30 KTS		VR V2							10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	VR	V2																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	VR	V2												
-35	80	6060	80	4560	81	4240	83	3970	84	3710	100	110	-35	81	6000	81	4530	81	4110	81	3730	82	3460	98	109														
-30	79	6060	81	4700	82	4410	83	4130	84	3860	100	110	-30	80	6000	80	4530	80	4120	81	3850	82	3600	98	109														
-25	78	6050	81	4900	82	4600	84	4310	85	4030	100	110	-25	79	5990	79	4570	80	4290	81	4010	83	3750	98	109														
-20	78	6100	82	5100	83	4790	84	4480	85	4190	100	110	-20	77	5970	79	4760	81	4460	82	4180	83	3910	98	109														
-15	78	6350	82	5310	83	4980	85	4670	86	4370	100	110	-15	76	5960	80	4950	81	4650	82	4360	83	4070	98	109														
-10	79	6610	83	5530	84	5190	85	4870	86	4560	100	110	-10	77	6160	81	5160	82	4840	83	4530	84	4240	98	109														
-5	79	6880	83	5760	84	5410	86	5080	87	4750	100	110	-5	77	6420	81	5370	82	5040	83	4730	84	4420	98	108														
0	80	7180	84	6010	85	5650	86	5300	87	4960	100	110	0	78	6690	82	5600	83	5260	84	4930	85	4620	98	108														
5	81	7530	85	6310	86	5930	87	5560	88	5210	100	110	5	79	7010	82	5870	84	5510	85	5170	86	4840	98	108														
10	82	7950	85	6660	87	6260	88	5880	89	5510	100	110	10	80	7390	83	6190	84	5810	85	5460	86	5110	98	108														
15	83	8420	86	7050	87	6630	88	6220	89	5830	100	110	15	81	7810	84	6540	85	6150	86	5770	87	5400	98	108														
20	84	8950	87	7490	88	7040	89	6610	90	6200	100	110	20	82	8290	85	6940	86	6530	87	6120	88	5740	98	108														
25	85	9540	89	7980	90	7500	90	7040	91	6600	100	110	25	83	8830	86	7390	87	6940	88	6520	89	6110	98	108														
26	85	9660	89	8080	90	7600	91	7130	91	6690	100	110	30	84	9420	87	7870	88	7400	89	6950	90	6510	98	108														
30			90	8520	91	8010	91	7510	92	7040	100	110																											

Figure 7-2 (Sheet

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 7°
12,000 FEET**

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 153 KIAS								WEIGHT = 13000 LBS								VENR = 152 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS														
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS															
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT												
-35	81	5950	81	4500	81	4090	81	3710	81	3360	96	107	-35	81	5910	81	4480	81	4080	81	3700	81	3350	94	106						
-30	80	5950	80	4500	80	4090	80	3710	80	3360	96	107	-30	80	5900	80	4480	80	4070	80	3700	80	3350	94	105						
-25	79	5930	79	4490	79	4080	79	3740	80	3490	96	107	-25	79	5880	79	4460	79	4060	79	3690	79	3340	94	105						
-20	78	5910	78	4480	78	4160	80	3890	81	3630	96	107	-20	78	5860	78	4450	78	4050	78	3680	78	3370	94	105						
-15	77	5900	78	4610	79	4320	80	4050	81	3790	96	107	-15	77	5840	77	4440	77	4040	78	3760	79	3510	94	105						
-10	75	5880	78	4800	79	4500	81	4220	82	3950	96	107	-10	76	5820	76	4460	77	4180	78	3910	79	3660	94	105						
-5	75	5980	79	5000	80	4690	81	4390	82	4110	96	107	-5	75	5790	77	4640	78	4350	79	4080	80	3810	94	105						
0	76	6220	79	5200	81	4890	82	4580	83	4280	96	107	0	74	5780	77	4830	78	4540	79	4250	80	3980	94	105						
5	77	6520	80	5450	81	5120	82	4800	83	4490	96	107	5	74	6050	78	5060	79	4750	80	4450	81	4160	94	105						
10	78	6860	81	5740	82	5390	83	5060	84	4740	96	107	10	75	6370	79	5320	80	5000	81	4680	82	4380	94	105						
15	79	7250	82	6060	83	5700	84	5340	85	5000	96	107	15	77	6710	80	5610	81	5270	82	4940	83	4630	94	105						
20	80	7680	83	6430	84	6040	85	5670	86	5310	96	107	20	78	7110	81	5950	82	5590	83	5240	84	4900	94	105						
25	81	8170	84	6830	85	6420	86	6020	87	5640	96	107	25	79	7550	82	6310	83	5930	84	5560	85	5200	94	105						
30	82	8700	85	7270	86	6830	87	6410	88	6000	96	107	30	80	8020	83	6710	84	6300	85	5910	86	5530	94	105						

WEIGHT = 12500 LBS								VENR = 151 KIAS				WEIGHT = 12000 LBS								VENR = 150 KIAS					
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-35	81	5870	81	4470	81	4070	81	3690	81	3350	92	104	-35	82	5840	82	4450	82	4060	82	3690	82	3350	91	103
-30	80	5860	80	4460	80	4060	80	3690	80	3340	92	104	-30	80	5820	80	4440	80	4050	80	3680	80	3340	90	102
-25	79	5840	79	4440	79	4040	79	3680	79	3330	92	104	-25	79	5800	79	4430	79	4030	79	3670	79	3330	90	102
-20	78	5810	78	4430	78	4030	78	3660	78	3320	92	103	-20	78	5770	78	4410	78	4020	78	3650	78	3310	90	102
-15	77	5790	77	4410	77	4020	77	3650	77	3310	92	103	-15	77	5750	77	4390	77	4000	77	3640	77	3300	90	102
-10	76	5770	76	4390	76	4000	76	3630	77	3380	92	103	-10	76	5720	76	4370	76	3980	76	3620	76	3280	90	101
-5	75	5740	75	4370	75	4030	76	3770	77	3520	92	103	-5	75	5690	75	4340	75	3960	75	3600	75	3260	90	101
0	74	5700	75	4480	76	4200	77	3930	78	3670	92	103	0	74	5650	74	4310	74	3930	74	3630	75	3390	90	101
5	72	5640	76	4680	77	4400	78	4120	79	3850	92	103	5	72	5580	73	4330	74	4060	75	3800	76	3550	90	101
10	73	5900	77	4930	78	4620	79	4330	79	4050	92	103	10	71	5490	74	4550	75	4270	76	4000	77	3740	90	101
15	74	6210	77	5190	78	4870	79	4570	80	4270	92	103	15	72	5740	75	4800	76	4490	77	4210	78	3930	90	101
20	75	6570	79	5490	79	5160	80	4830	81	4520	92	103	20	73	6070	76	5060	77	4750	78	4450	79	4160	90	101
25	77	6970	80	5820	81	5470	81	5120	82	4790	92	103	25	74	6420	77	5360	78	5030	79	4710	80	4410	90	101
30	78	7400	81	6180	82	5810	82	5440	83	5090	92	103	30	75	6810	78	5690	79	5340	80	5000	81	4680	90	101

WEIGHT = 11500 LBS								VENR = 150 KIAS				WEIGHT = 11000 LBS								VENR = 149 KIAS						
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	V1 DIST	30 KTS	10 KTS		V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	V1 DIST	30 KTS	10 KTS		V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	V1 DIST	30 KTS	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	82	5820	82	4450	82	4060	82	3700	82	3360	88	101	-35	82	5800	82	4450	82	4070	82	3710	82	3370	87	101	
-30	81	5800	81	4440	81	4050	81	3680	81	3350	88	101	-30	81	5780	81	4440	81	4050	81	3690	81	3360	86	99	
-25	80	5770	80	4420	80	4030	80	3670	80	3330	88	101	-25	80	5750	80	4410	80	4030	80	3670	80	3340	86	99	
-20	79	5740	79	4390	79	4010	79	3650	79	3310	88	100	-20	79	5710	79	4390	79	4010	79	3650	79	3320	86	99	
-15	77	5710	77	4370	77	3990	77	3630	77	3300	88	100	-15	78	5680	78	4360	78	3980	78	3630	78	3300	86	99	
-10	76	5680	76	4350	76	3970	76	3610	76	3280	88	100	-10	77	5650	77	4340	77	3960	77	3610	77	3280	86	98	
-5	75	5640	75	4320	75	3940	75	3590	75	3250	88	100	-5	75	5610	75	4310	75	3930	75	3580	75	3250	86	98	
0	74	5600	74	4290	74	3910	74	3560	74	3230	88	99	0	74	5560	74	4270	74	3900	74	3550	74	3220	86	98	
5	73	5530	73	4240	73	3860	73	3510	74	3260	88	99	5	73	5490	73	4210	73	3840	73	3500	73	3180	86	97	
10	71	5440	71	4190	72	3930	73	3680	74	3430	88	99	10	71	5390	71	4130	71	3770	71	3430	72	3140	86	97	
15	69	5330	72	4410	73	4140	74	3870	75	3620	88	99	15	70	5280	70	4050	71	3790	72	3550	73	3310	86	97	
20	70	5590	74	4660	74	4370	75	4090	76	3820	88	99	20	68	5170	71	4270	72	4000	73	3750	74	3500	86	97	
25	72	5910	75	4930	75	4620	76	4330	77	4040	88	99	25	69	5430	72	4520	73	4240	74	3960	75	3690	86	97	
30	73	6260	76	5220	77	4900	77	4590	78	4290	88	99	30	70	5740	73	4780	74	4480	75	4190	76	3910	86	97	



Figure 7-2 (Sheet 26 of 30)

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
13,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
VENR = 157 KIAS										VENR = 157 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-35	84 7530	88 6300	90 5920	91 5550	92 5200	106 116				-35	83 7250	87 6060	89 5690	90 5340	91 5000	105 115			
-30	84 7850	89 6570	90 6170	91 5790	92 5430	106 116				-30	83 7550	88 6320	89 5940	90 5570	91 5220	105 115			
-25	85 8190	89 6860	90 6450	92 6050	93 5670	106 116				-25	84 7870	88 6590	89 6190	91 5810	92 5450	105 115			
-20	85 8540	90 7160	91 6730	92 6320	93 5920	106 116				-20	84 8210	89 6880	90 6460	91 6070	92 5690	105 115			
-15	86 8920	90 7470	91 7030	93 6600	94 6190	106 116				-15	85 8560	89 7180	90 6750	91 6340	93 5940	105 115			
-10	86 9310	91 7810	92 7340	93 6900	94 6470	106 116				-10	85 8940	89 7490	91 7050	92 6620	93 6210	105 115			
-5	87 9740	91 8170	92 7680	93 7220	95 6770	106 116				-5	86 9340	90 7840	91 7370	92 6920	93 6490	105 115			
0	88 10200	92 8550	93 8040	94 7560	95 7090	106 116				0	87 9780	90 8200	92 7710	93 7240	94 6800	105 115			
5		92 9040	94 8500	95 7980	96 7490	106 116				5		91 8660	92 8140	94 7650	95 7180	105 115			
6		93 9140	94 8600	95 8070	96 7570	106 116				9		92 9060	93 8520	94 8000	95 7510	105 115			
9		93 9450	94 8900	95 8360	96 7840	106 116				10		92 9160	93 8620	94 8090	95 7590	105 115			
										13		93 9500	94 8940	95 8390	96 7870	105 115			

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 156 KIAS										VENR = 155 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-35	81 6800	85 5680	87 5330	88 5000	89 4680	104 114				-35	79 6360	83 5320	84 4990	86 4670	87 4370	102 112			
-30	82 7070	86 5910	87 5560	88 5210	89 4880	104 114				-30	80 6620	84 5530	85 5190	86 4870	87 4560	102 112			
-25	82 7370	86 6170	87 5790	89 5430	90 5090	104 114				-25	80 6900	84 5760	85 5410	87 5080	88 4750	102 112			
-20	83 7680	87 6430	88 6040	89 5670	90 5310	104 114				-20	81 7170	85 6000	86 5640	87 5290	88 4960	102 112			
-15	83 8000	87 6700	88 6300	89 5920	91 5540	104 114				-15	81 7470	85 6260	86 5880	87 5520	89 5170	102 112			
-10	84 8340	88 7000	89 6580	90 6180	91 5790	104 114				-10	82 7790	86 6530	87 6130	88 5760	89 5400	102 112			
-5	84 8720	88 7310	89 6870	90 6460	91 6050	104 114				-5	82 8130	86 6810	87 6410	88 6010	89 5640	102 112			
0	85 9110	89 7640	90 7190	91 6750	92 6330	104 114				0	83 8490	87 7120	88 6690	89 6290	90 5890	102 112			
5	86 9610	89 8060	91 7580	92 7120	93 6680	104 114				5	84 8940	87 7500	89 7050	90 6620	91 6210	102 112			
10	86 10160	90 8520	91 8010	92 7520	93 7060	104 114				10	85 9440	88 7920	89 7450	90 6990	91 6560	102 112			
13		91 8830	92 8300	93 7800	94 7310	103 114				15	86 10020	89 8400	90 7900	91 7420	92 6960	102 112			
15		91 9050	92 8510	93 8000	94 7500	103 114				17	86 10280	90 8610	91 8100	92 7610	93 7130	102 112			
17		92 9290	93 8740	94 8200	95 7690	103 114				20		90 8950	91 8420	92 7900	93 7410	102 112			
										21		90 9070	91 8530	92 8010	93 7510	102 112			

WEIGHT = 14500 LBS										WEIGHT = 14000 LBS									
VENR = 154 KIAS										VENR = 153 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS					DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS				
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2				C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	VR V2			
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS					KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS			
-35	78 6160	81 4970	82 4660	84 4370	85 4090	100 110				-35	79 6090	79 4640	80 4350	81 4070	82 3800	98 109			
-30	78 6190	82 5170	83 4860	84 4550	85 4250	100 110				-30	78 6090	79 4820	81 4530	82 4240	83 3960	98 109			
-25	78 6440	82 5380	83 5050	84 4740	86 4430	100 110				-25	77 6080	80 5020	81 4710	82 4420	83 4130	98 109			
-20	79 6700	83 5600	84 5260	85 4940	86 4620	100 110				-20	77 6250	80 5230	82 4900	83 4600	84 4300	98 109			
-15	79 6970	83 5840	84 5480	85 5140	86 4820	100 110				-15	77 6500	81 5440	82 5110	83 4790	84 4480	98 108			
-10	80 7260	84 6080	85 5720	86 5360	87 5020	100 110				-10	78 6760	81 5660	83 5320	84 4990	85 4670	98 108			
-5	80 7570	84 6340	85 5960	86 5600	87 5250	100 110				-5	78 7050	82 5900	83 5550	84 5200	85 4870	98 108			
0	81 7900	85 6620	86 6230	87 5850	88 5480	100 110				0	79 7350	83 6160	84 5790	85 5430	86 5090	98 108			
5	82 8310	85 6970	87 6550	88 6150	89 5770	100 110				5	80 7720	83 6470	84 6090	85 5710	86 5350	98 108			
10	83 8760	86 7350	87 6910	88 6490	89 6090	100 110				10	81 8130	84 6820	85 6410	86 6020	87 5640	98 108			
15	84 9290	87 7790	88 7330	89 6880	90 6450	100 110				15	82 8610	85 7220	86 6790	87 6370	88 5970	98 108			
20	85 9890	88 8290	89 7790	90 7320	91 6870	100 110				20	83 9150	86 7670	87 7210	88 6770	89 6350	98 108			
21	85 10020	88 8390	89 7890	90 7410	91 6950	100 110				25	84 9760	87 8170	88 7680	89 7220	90 6760	98 108			
25		89 8840	90 8310	91 7810	92 7320	100 110				28	85 10150	88 8500	89 7990	90 7500	90 7030	98 108			



Figure 7-2 (Sheet 27 of 30)

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7° 13,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								WEIGHT = 13000 LBS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS
			10 KTS	20 KTS	30 KTS	10 KTS					20 KTS	30 KTS			
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT			
-35	79 6040	79 4570	79 4150	79 3790	80 3540	96 107	-35	79 5990	79 4540	79 4130	79 3750	79 3400	94 105		
-30	78 6030	78 4570	78 4210	79 3940	81 3680	96 107	-30	78 5980	78 4540	78 4130	78 3750	78 3420	94 105		
-25	77 6020	78 4670	79 4380	80 4110	81 3840	96 107	-25	77 5960	77 4530	77 4120	78 3810	79 3560	94 105		
-20	76 6010	78 4860	79 4570	80 4280	82 4000	96 107	-20	76 5950	76 4520	77 4240	78 3970	79 3710	94 105		
-15	75 6050	79 5060	80 4750	81 4460	82 4160	96 107	-15	75 5940	76 4700	78 4410	79 4130	80 3860	94 105		
-10	76 6290	79 5260	80 4940	81 4630	82 4340	96 107	-10	74 5920	77 4890	78 4590	79 4300	80 4020	94 105		
-5	76 6560	80 5480	81 5150	82 4830	83 4520	96 107	-5	74 6090	78 5090	79 4780	80 4480	81 4190	94 105		
0	77 6830	80 5720	81 5370	82 5040	83 4720	96 107	0	75 6340	78 5300	79 4980	80 4670	81 4370	94 105		
5	78 7170	81 6000	82 5640	83 5300	84 4960	96 107	5	75 6650	79 5560	80 5230	81 4900	82 4590	94 105		
10	79 7540	82 6320	83 5940	84 5570	85 5220	96 107	10	76 6980	80 5850	81 5500	82 5160	83 4830	94 105		
15	80 7970	83 6680	84 6280	85 5900	86 5530	96 107	15	77 7380	81 6180	82 5810	83 5450	84 5100	94 105		
20	81 8460	84 7090	85 6670	86 6260	87 5870	96 107	20	79 7820	82 6550	83 6160	84 5780	84 5410	94 105		
25	82 9010	85 7550	86 7090	87 6660	88 6240	96 107	25	80 8310	83 6960	84 6540	84 6140	85 5750	94 105		
28	83 9360	86 7840	87 7370	87 6920	88 6480	96 107	28	80 8630	83 7230	84 6790	85 6370	86 5970	94 105		

WEIGHT = 12500 LBS							VENR = 150 KIAS							WEIGHT = 12000 LBS							VENR = 150 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S				VR V2 KIAS												
			10 KTS		20 KTS						30 KTS		10 KTS			20 KTS		30 KTS									
			V1	DIST	V1	DIST					V1	DIST	V1	DIST		V1	DIST	V1	DIST								
			KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT						
-35	79 5940	79 4520	79 4120	79 3740	79 3390	92 104	-35	79 5900	79 4510	79 4110	79 3730	79 3390	90 102														
-30	78 5930	78 4510	78 4110	78 3740	78 3390	92 103	-30	78 5890	78 4500	78 4100	78 3730	78 3380	90 102														
-25	77 5910	77 4500	77 4100	77 3730	77 3380	92 103	-25	77 5870	77 4480	77 4080	77 3710	77 3370	90 102														
-20	76 5900	76 4490	76 4090	76 3720	77 3430	92 103	-20	76 5850	76 4470	76 4070	76 3700	76 3360	90 101														
-15	75 5880	75 4480	75 4090	76 3820	77 3570	92 103	-15	75 5830	75 4450	75 4060	75 3690	75 3350	90 101														
-10	74 5860	75 4530	76 4250	77 3980	78 3720	92 103	-10	74 5810	74 4440	74 4040	74 3680	75 3430	90 101														
-5	73 5830	75 4710	76 4430	77 4150	78 3880	92 103	-5	73 5780	73 4410	74 4090	75 3830	76 3570	90 101														
0	72 5870	76 4910	77 4610	78 4320	79 4040	92 103	0	72 5740	73 4540	74 4260	75 3990	76 3730	90 101														
5	73 6160	77 5150	78 4830	79 4530	79 4240	92 103	5	71 5690	74 4750	75 4460	76 4180	77 3910	90 101														
10	74 6460	77 5410	78 5080	79 4760	80 4450	92 103	10	72 5970	75 4990	76 4680	77 4390	78 4100	90 101														
15	75 6820	78 5700	79 5360	80 5030	81 4700	92 103	15	73 6290	76 5260	77 4940	78 4630	79 4330	90 101														
20	76 7220	79 6040	80 5680	81 5320	82 4980	92 103	20	74 6650	77 5560	78 5220	79 4900	80 4580	90 101														
25	77 7660	80 6410	81 6020	82 5650	83 5290	92 103	25	75 7050	78 5900	79 5540	80 5190	81 4860	90 101														
28	78 7950	81 6650	82 6250	83 5860	84 5490	92 103	28	76 7310	79 6110	79 5740	80 5380	81 5040	90 101														

WEIGHT = 11500 LBS								WEIGHT = 11000 LBS									
		ZERO WIND		HEADWINDS				VR V2 KIAS			ZERO WIND		HEADWINDS				VR V2 KIAS
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS			TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS		
						V1 DIST KIAS FT	V1 DIST KIAS FT								V1 DIST KIAS FT	V1 DIST KIAS FT	
-35	80 5870	80 4500	80 4100	80 3730	80 3390	88 101		-35	80 5850	80 4490	80 4100	80 3740	80 3400	86 99			
-30	79 5850	79 4480	79 4090	79 3720	79 3380	88 100		-30	79 5830	79 4480	79 4090	79 3720	79 3380	86 99			
-25	78 5830	78 4470	78 4070	78 3710	78 3370	88 100		-25	78 5800	78 4460	78 4070	78 3710	78 3370	86 99			
-20	77 5810	77 4450	77 4060	77 3690	77 3350	88 100		-20	77 5780	77 4440	77 4050	77 3690	77 3350	86 98			
-15	75 5790	75 4430	75 4040	75 3680	75 3340	88 100		-15	76 5750	76 4420	76 4030	76 3670	76 3340	86 98			
-10	74 5760	74 4410	74 4020	74 3660	74 3320	88 99		-10	75 5720	75 4390	75 4010	75 3650	75 3320	86 98			
-5	73 5730	73 4390	73 4000	73 3640	73 3300	88 99		-5	74 5680	74 4370	74 3980	74 3630	74 3300	86 98			
0	72 5690	72 4360	72 3970	73 3670	74 3420	88 99		0	72 5640	72 4340	72 3960	72 3600	72 3270	86 97			
5	71 5610	71 4380	72 4110	73 3840	74 3590	88 99		5	71 5570	71 4270	71 3900	71 3550	72 3290	86 97			
10	69 5540	72 4590	73 4310	74 4040	75 3770	88 99		10	70 5480	70 4220	71 3950	72 3690	73 3450	86 97			
15	70 5800	73 4840	74 4550	75 4250	76 3970	88 99		15	68 5380	71 4440	72 4160	73 3890	73 3640	86 97			
20	71 6120	74 5110	75 4800	76 4490	77 4200	88 99		20	69 5620	72 4690	73 4400	73 4110	74 3840	86 97			
25	73 6480	75 5410	76 5080	77 4760	78 4450	88 99		25	70 5950	73 4950	74 4650	74 4350	75 4060	86 97			
28	73 6710	76 5610	77 5260	78 4930	79 4610	88 99		28	71 6150	73 5130	74 4810	75 4500	76 4210	86 97			



Figure 7-2 (Sheet 28 of 30)

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
14,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 156 KIAS								WEIGHT = 16000 LBS								VENR = 156 KIAS														
TEMP DEG C	TAILWIND		ZERO		HEADWINDS			VR	V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS			VR	V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS			VR	V2									
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	V1 DIST	V1 DIST														
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	85	8330	89	6980	90	6560	92	6150	93	5770	106	116	-35	84	8010	88	6700	89	6300	91	5910	92	5540	105	115	-35	84	8010	88	6700	89	6300	91	5910	92	5540	105	115
-30	85	8690	90	7280	91	6850	92	6430	93	6020	106	116	-30	84	8350	89	6990	90	6580	91	6170	92	5780	105	115	-30	84	8350	89	6990	90	6580	91	6170	92	5780	105	115
-25	86	9070	90	7600	91	7150	92	6710	94	6290	106	116	-25	85	8710	89	7300	90	6870	91	6450	92	6040	105	115	-25	85	8710	89	7300	90	6870	91	6450	92	6040	105	115
-20	86	9470	90	7940	92	7470	93	7010	94	6580	106	116	-20	85	9090	89	7620	91	7170	92	6730	93	6310	105	115	-20	85	9090	89	7620	91	7170	92	6730	93	6310	105	115
-15	87	9890	91	8290	92	7800	93	7330	94	6880	106	116	-15	86	9490	90	7960	91	7490	92	7030	93	6600	105	115	-15	86	9490	90	7960	91	7490	92	7030	93	6600	105	115
-10	87	10340	91	8670	93	8160	94	7670	95	7190	106	116	-10	86	9910	90	8320	91	7820	93	7350	94	6900	105	115	-10	86	9910	90	8320	91	7820	93	7350	94	6900	105	115
-5			92	9080	93	8540	94	8030	95	7530	106	116	-5	87	10370	91	8700	92	8190	93	7690	94	7220	105	115	-5	87	10370	91	8700	92	8190	93	7690	94	7220	105	115
0			92	9540	94	8970	95	8430	96	7910	106	116	0			91	9130	92	8590	93	8080	95	7580	105	115	0			91	9130	92	8590	93	8080	95	7580	105	115
3			93	9850	94	9270	95	8710	96	8170	106	116	3			92	9430	93	8870	94	8340	95	7830	105	115	3			92	9430	93	8870	94	8340	95	7830	105	115
													5			92	9640	93	9070	94	8520	95	8000	105	115	5			92	9640	93	9070	94	8520	95	8000	105	115
													8			92	9970	94	9370	95	8810	96	8270	105	115	8			92	9970	94	9370	95	8810	96	8270	105	115

WEIGHT = 15500 LBS										VENR = 155 KIAS				WEIGHT = 15000 LBS										VENR = 154 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO		HEADWINDS						VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	10 KTS				10 KTS	20 KTS	30 KTS		10 KTS							10 KTS	20 KTS	30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1

WEIGHT = 14500 LBS											VENR = 153 KIAS											WEIGHT = 14000 LBS											VENR = 153 KIAS													
TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S			VR	V2			TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S			VR	V2			TEMP DEG C	TAILWIND		ZERO		H E A D W I N D S			VR	V2													
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS						10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS						10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS					10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS						FT	KIAS	FT	KIAS	FT	KIAS	FT						KIAS	FT	KIAS	FT	KIAS	FT	KIAS					FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT
-35	78	6550	82	5470	83	5140	84	4820	86	4510	100	110	-35	77	6200	80	5110	81	4790	82	4490	83	4200	98	109	-35	77	6200	80	5110	81	4790	82	4490	83	4200	98	109								
-30	79	6820	83	5700	84	5350	85	5020	86	4700	100	110	-30	77	6360	80	5320	82	4990	83	4680	84	4370	98	109	-30	77	6360	80	5320	82	4990	83	4680	84	4370	98	109								
-25	79	7090	83	5940	84	5580	85	5230	86	4900	100	110	-25	77	6620	81	5530	82	5200	83	4870	84	4560	98	108	-25	77	6620	81	5530	82	5200	83	4870	84	4560	98	108								
-20	80	7380	83	6190	85	5810	86	5460	87	5110	100	110	-20	78	6890	81	5760	82	5410	84	5080	85	4750	98	108	-20	78	6890	81	5760	82	5410	84	5080	85	4750	98	108								
-15	80	7690	84	6440	85	6060	86	5690	87	5330	100	110	-15	78	7160	82	6000	83	5640	84	5290	85	4950	98	108	-15	78	7160	82	6000	83	5640	84	5290	85	4950	98	108								
-10	81	8010	84	6720	86	6320	87	5930	88	5560	100	110	-10	79	7450	82	6250	83	5870	84	5510	85	5170	98	108	-10	79	7450	82	6250	83	5870	84	5510	85	5170	98	108								
-5	81	8360	85	7020	86	6600	87	6200	88	5810	100	110	-5	79	7770	83	6520	84	6130	85	5750	86	5390	98	108	-5	79	7770	83	6520	84	6130	85	5750	86	5390	98	108								
0	82	8750	86	7340	87	6910	88	6490	89	6090	100	110	0	80	8120	83	6810	85	6410	86	6020	86	5640	98	108	0	80	8120	83	6810	85	6410	86	6020	86	5640	98	108								
5	83	9200	86	7720	87	7260	88	6820	89	6400	100	110	5	81	8530	84	7160	85	6730	86	6330	87	5930	98	108	5	81	8530	84	7160	85	6730	86	6330	87	5930	98	108								
10	84	9690	87	8140	88	7650	89	7190	90	6750	100	110	10	82	8980	85	7530	86	7090	87	6660	88	6250	98	108	10	82	8980	85	7530	86	7090	87	6660	88	6250	98	108								
15	85	10300	88	8640	89	8130	90	7640	91	7170	100	110	15	83	9530	86	8000	87	7520	88	7070	89	6630	98	108	15	83	9530	86	8000	87	7520	88	7070	89	6630	98	108								
17			88	8860	89	8340	90	7830	91	7350	100	110	20	84	10140	87	8510	88	8000	89	7520	90	7050	98	108	20	84	10140	87	8510	88	8000	89	7520	90	7050	98	108								
20			89	9210	90	8660	91	8140	92	7640	100	110	21	84	10280	87	8620	88	8100	89	7610	90	7150	98	108	21	84	10280	87	8620	88	8100	89	7610	90	7150	98	108								
21			89	9330	90	8780	91	8250	92	7740	100	110	25			88	9080	89	8540	90	8020	90	7530	98	108	25			88	9080	89	8540	90	8020	90	7530	98	108								

Figure 7-2 (Sheet 29 of 30)

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 7°
14,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
VENR = 151 KIAS										VENR = 150 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S									
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS			10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				
-35	77	6140	78	4750	79	4460	80	4180	81	3900	96	107	-35	77	6080	77	4620	77	4200	78	3880	79	3620	94	105
-30	76	6140	78	4950	79	4640	80	4350	82	4070	96	107	-30	76	6070	76	4620	77	4310	78	4040	79	3770	94	105
-25	75	6160	79	5150	80	4840	81	4530	82	4240	96	107	-25	75	6070	76	4780	77	4490	79	4200	80	3930	94	105
-20	75	6400	79	5360	80	5030	81	4720	82	4410	96	107	-20	74	6060	77	4970	78	4670	79	4380	80	4090	94	105
-15	76	6660	80	5570	81	5240	82	4910	83	4600	96	107	-15	74	6180	77	5170	78	4860	79	4550	80	4260	94	105
-10	77	6930	80	5800	81	5450	82	5120	83	4790	96	107	-10	74	6430	78	5380	79	5060	80	4740	81	4440	94	105
-5	77	7220	81	6050	82	5690	83	5340	84	5000	96	107	-5	75	6700	78	5610	79	5270	80	4940	81	4630	94	105
0	78	7530	81	6320	82	5940	83	5580	84	5230	96	107	0	76	6980	79	5850	80	5500	81	5160	82	4830	94	105
5	79	7900	82	6630	83	6240	84	5860	85	5490	96	107	5	76	7320	80	6140	81	5770	82	5410	83	5070	94	105
10	79	8310	83	6970	84	6560	85	6160	86	5780	96	107	10	77	7680	81	6450	81	6060	82	5690	83	5330	94	105
15	81	8810	84	7390	85	6950	86	6530	86	6120	96	107	15	78	8140	81	6820	82	6420	83	6030	84	5650	94	105
20	82	9360	85	7850	86	7390	87	6940	87	6510	96	107	20	79	8630	82	7240	83	6810	84	6390	85	5990	94	105
25	83	9980	86	8370	87	7870	87	7400	88	6940	96	107	25	81	9200	84	7710	84	7250	85	6810	86	6380	94	105
26	83	10120	86	8480	87	7980	88	7490	88	7030	96	107	26	81	9320	84	7810	85	7340	85	6900	86	6460	94	105

WEIGHT = 12500 LBS										VENR = 150 KIAS										WEIGHT = 12000 LBS										VENR = 149 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		V1 DIST		30 KTS																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	77	6030	77	4590	77	4180	77	3800	77	3440	92 103	-35	77	5980	77	4570	77	4160	77	3790	77	3440	90 102																
-30	76	6020	76	4590	76	4180	76	3790	77	3490	92 103	-30	76	5970	76	4560	76	4160	76	3780	76	3430	90 101																
-25	75	6010	75	4580	75	4170	76	3890	77	3630	92 103	-25	75	5960	75	4550	75	4150	75	3770	75	3420	90 101																
-20	74	6000	74	4610	76	4320	77	4050	78	3780	92 103	-20	74	5940	74	4540	74	4140	74	3760	75	3490	90 101																
-15	73	5990	75	4790	76	4500	77	4210	78	3940	92 103	-15	73	5930	73	4530	73	4160	75	3890	76	3630	90 101																
-10	72	5970	75	4990	77	4680	78	4390	79	4110	92 103	-10	72	5910	73	4610	74	4320	75	4050	76	3780	90 101																
-5	73	6200	76	5190	77	4880	78	4570	79	4270	92 103	-5	71	5890	74	4790	75	4500	76	4220	77	3940	90 101																
0	73	6470	77	5410	78	5080	79	4770	80	4460	92 103	0	71	5980	74	5000	75	4700	76	4400	77	4120	90 101																
5	74	6770	77	5670	78	5330	79	5000	80	4680	92 103	5	72	6250	75	5230	76	4910	77	4600	78	4310	90 101																
10	75	7100	78	5950	79	5590	80	5250	81	4910	92 103	10	73	6550	76	5480	77	5150	78	4830	79	4520	90 101																
15	76	7510	79	6290	80	5920	81	5550	82	5200	92 103	15	74	6920	77	5790	78	5440	79	5110	79	4780	90 101																
20	77	7960	80	6670	81	6270	82	5880	83	5510	92 103	20	75	7320	78	6130	79	5760	79	5410	80	5060	90 101																
25	78	8460	81	7090	82	6670	83	6260	84	5860	92 103	25	76	7770	79	6510	80	6120	80	5740	81	5380	90 101																
26	79	8570	81	7180	82	6750	83	6340	84	5940	92 103	26	76	7870	79	6590	80	6200	81	5810	81	5440	90 101																

WEIGHT = 11500 LBS										VENR = 148 KIAS										WEIGHT = 11000 LBS										VENR = 147 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS																		
	V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT			V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT	V1 KIAS	V1 FT																	
-35	78	5950	78	4550	78	4150	78	3780	78	3430	88	100	-35	78	5920	78	4540	78	4150	78	3780	78	3430	86	99														
-30	77	5930	77	4540	77	4140	77	3770	77	3420	88	100	-30	77	5900	77	4530	77	4140	77	3770	77	3420	86	98														
-25	76	5910	76	4530	76	4130	76	3760	76	3410	88	100	-25	76	5880	76	4520	76	4120	76	3750	76	3410	86	98														
-20	75	5900	75	4520	75	4120	75	3750	75	3400	88	99	-20	75	5860	75	4500	75	4110	75	3740	75	3400	86	98														
-15	74	5880	74	4510	74	4110	74	3740	74	3390	88	99	-15	74	5840	74	4480	74	4090	74	3730	74	3390	86	98														
-10	72	5860	72	4490	72	4090	72	3730	73	3480	88	99	-10	73	5810	73	4460	73	4070	73	3710	73	3370	86	97														
-5	71	5830	71	4470	72	4140	73	3880	74	3620	88	99	-5	72	5780	72	4440	72	4050	72	3690	72	3350	86	97														
0	70	5790	72	4600	73	4320	74	4040	75	3780	88	99	0	70	5730	70	4410	70	4020	71	3710	72	3460	86	97														
5	69	5760	72	4810	73	4520	74	4240	75	3960	88	99	5	69	5670	70	4410	71	4140	72	3880	73	3620	86	97														
10	70	6030	73	5050	74	4730	75	4440	76	4150	88	99	10	68	5600	71	4620	71	4340	72	4060	73	3800	86	97														
15	71	6360	74	5320	75	5000	76	4680	77	4380	88	99	15	69	5840	72	4880	72	4580	73	4280	74	4000	86	97														
20	72	6730	75	5630	76	5290	77	4960	78	4640	88	99	20	70	6170	73	5150	73	4830	74	4530	75	4230	86	97														
25	74	7130	76	5970	77	5610	78	5260	79	4920	88	99	25	71	6530	74	5450	74	5120	75	4800	76	4490	86	97														
26	74	7220	76	6040	77	5670	78	5320	79	4980	88	99	26	71	6610	74	5520	75	5180	75	4850	76	4540	86	97														

TAKEOFF FIELD LENGTH - FEET, WITH FLAPS 15°

Determine takeoff field length, V_1 , V_R , V_2 and V_{ENR} from Figure 7-4 and correct for runway gradient, and anti-icing requirements using Figure 7-3.

If the required distance is greater than the available distance, the airplane weight must be reduced until distance required is less than or equal to distance available.

TAKEOFF CORRECTION FACTORS - FLAPS 15°

If the runway has a gradient and/or airplane anti-ice systems on, the following correction factors must be applied to the distances and V_1 speeds.

RUNWAY GRADIENT	SHADED AREA		NON-SHADED AREA	
	V_1 *	MULTIPLY DISTANCE BY	V_1 *	MULTIPLY DISTANCE BY
2% UPHILL	USE V_R	1.60	USE V_R	1.60
1% UPHILL	ADD 5 KNOTS	1.15	ADD 5 KNOTS	1.15
1% DOWNHILL	ADD 1 KNOT	1.10	ADD 1 KNOT	1.10
2% DOWNHILL	SUBTRACT 1 KNOT	1.10	ADD 1 KNOT	1.20

CORRECTION FACTORS - ANTI-ICE ON	
V_1 - KIAS	ADD 2 KNOTS
TAKEOFF FIELD LENGTH - FEET	MULTIPLY DISTANCE BY 1.10

- * If the adjusted V_1 is greater than V_R , the value of V_R must be used for V_1 .



Figure 7-3

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° SEA LEVEL

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
VENR = 172 KIAS										VENR = 171 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	VR	V2			DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	VR	V2		
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	KIAS	FT			C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	KIAS	FT		
KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25	87 4860	87 3590	87 3230	87 2900	87 2590	102 112				-25	87 4850	87 3580	87 3230	87 2900	87 2590	101 111			
-20	87 4960	87 3660	87 3300	87 2960	87 2650	102 112				-20	87 4950	87 3660	87 3300	87 2960	87 2650	101 111			
-15	87 5060	87 3740	87 3370	87 3030	87 2710	102 112				-15	87 5050	87 3740	87 3370	87 3030	87 2710	101 111			
-10	87 5160	87 3820	87 3440	87 3090	87 2770	102 112				-10	87 5150	87 3810	87 3440	87 3090	87 2770	101 111			
-5	87 5260	87 3890	87 3510	87 3160	87 2830	102 112				-5	87 5240	87 3890	87 3510	87 3160	87 2830	101 111			
0	87 5360	87 3970	87 3580	87 3220	87 2890	102 112				0	87 5340	87 3960	87 3580	87 3220	87 2890	101 111			
5	87 5450	87 4040	87 3650	87 3290	87 2950	102 112				5	87 5440	87 4040	87 3640	87 3280	87 2950	101 111			
10	87 5560	87 4120	87 3720	87 3350	87 3010	102 112				10	87 5540	87 4110	87 3710	87 3350	87 3010	101 111			
15	87 5660	87 4200	87 3790	87 3420	87 3070	102 112				15	87 5640	87 4190	87 3790	87 3410	87 3070	101 111			
20	86 5700	86 4230	86 3820	86 3440	86 3100	102 112				20	86 5680	86 4220	86 3810	86 3440	86 3090	101 111			
25	86 5740	86 4260	86 3850	86 3470	86 3130	102 112				25	86 5710	86 4250	86 3840	86 3470	86 3120	101 111			
30	84 5600	84 4160	84 3800	86 3540	87 3290	102 112				30	84 5580	84 4150	84 3750	84 3410	85 3170	101 111			
35	82 5430	84 4320	86 4030	87 3750	88 3490	102 112				35	82 5400	83 4160	84 3880	86 3620	87 3360	101 111			
40	82 5580	86 4590	87 4280	88 3990	89 3710	102 112				40	81 5380	85 4430	86 4130	87 3840	88 3570	101 111			
45	83 5360	87 4900	88 4570	89 4260	90 3950	102 112				45	82 5740	86 4720	87 4400	88 4100	89 3810	101 111			
50	85 6380	89 5240	90 4890	91 4550	92 4230	102 112				50	84 6140	87 5040	88 4700	90 4380	90 4070	101 111			
52	86 6550	89 5380	90 5020	91 4680	92 4350	102 112				54	85 6480	89 5320	90 4970	91 4620	92 4290	101 111			
54	86 6740	90 5530	91 5160	92 4810	93 4470	102 112													

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 171 KIAS										VENR = 169 KIAS									
TEMP	TAILWIND	ZERO	HEADWINDS							TEMP	TAILWIND	ZERO	HEADWINDS						
DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	VR	V2			DEG	10 KTS	WIND	10 KTS	20 KTS	30 KTS	VR	V2		
C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	KIAS	FT			C	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	KIAS	FT		
KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25	88 4830	88 3580	88 3230	88 2900	88 2600	99 110				-25	88 4820	88 3580	88 3230	88 2900	88 2600	98 108			
-20	88 4930	88 3650	88 3300	88 2960	88 2660	99 110				-20	88 4920	88 3650	88 3300	88 2970	88 2660	98 108			
-15	87 5030	87 3730	87 3370	87 3030	87 2720	99 110				-15	88 5010	88 3730	88 3370	88 3030	88 2720	98 108			
-10	87 5130	87 3810	87 3440	87 3090	87 2780	99 110				-10	88 5110	88 3810	88 3440	88 3100	88 2780	98 108			
-5	87 5220	87 3880	87 3510	87 3160	87 2840	99 110				-5	88 5210	88 3880	88 3510	88 3160	88 2840	98 108			
0	87 5320	87 3960	87 3570	87 3220	87 2890	99 110				0	87 5300	87 3950	87 3570	87 3220	87 2900	98 108			
5	87 5410	87 4030	87 3640	87 3280	87 2950	99 110				5	87 5390	87 4030	87 3640	87 3290	87 2960	98 108			
10	87 5510	87 4100	87 3710	87 3350	87 3010	99 110				10	87 5490	87 4100	87 3710	87 3350	87 3020	98 108			
15	87 5610	87 4180	87 3780	87 3410	87 3070	99 110				15	87 5590	87 4180	87 3780	87 3410	87 3070	98 108			
20	87 5650	87 4210	87 3810	87 3440	87 3090	99 110				20	87 5620	87 4200	87 3810	87 3440	87 3100	98 108			
25	86 5680	86 4240	86 3830	86 3460	86 3120	99 110				25	86 5660	86 4230	86 3830	86 3460	86 3120	98 108			
30	84 5550	84 4140	84 3740	84 3370	84 3040	99 110				30	84 5520	84 4130	84 3730	84 3370	84 3040	98 108			
35	82 5370	82 4000	82 3650	83 3390	85 3150	99 110				35	82 5330	82 3990	82 3600	82 3250	82 2950	98 108			
40	80 5190	82 4150	84 3880	85 3610	86 3350	99 110				40	80 5150	80 3900	81 3630	83 3380	84 3140	98 108			
45	80 5390	84 4430	85 4130	86 3840	87 3570	99 110				45	78 5060	82 4150	83 3870	84 3600	85 3340	97 108			
50	82 5760	85 4730	86 4410	87 4100	88 3810	99 110				50	80 5400	83 4430	84 4130	85 3840	86 3560	97 108			
54	83 6080	86 4990	88 4650	89 4330	89 4020	99 109				54	81 5690	84 4660	85 4350	86 4050	87 3750	97 108			

WEIGHT = 14500 LBS										VENR = 169 KIAS										WEIGHT = 14000 LBS										VENR = 168 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR	V2	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						VR	V2																		
			10 KTS		20 KTS		30 KTS							10 KTS		20 KTS		30 KTS																					
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																				
-25	88 4810	88 3590	88 3240	88 2910	88 2610	96 107				-25	88 4810	88 3600	88 3250	88 2930	88 2630	94 106				-20	88 4910	88 3660	88 3310	88 2980	88 2670	96 107				-20	88 4910	88 3670	88 3320	88 2990	88 2690	94 106			
-15	88 5000	88 3730	88 3370	88 3040	88 2730	96 107				-15	88 5000	88 3740	88 3390	88 3050	88 2750	94 106				-15	88 5000	88 3740	88 3390	88 3050	88 2730	96 107				-15	88 5000	88 3740	88 3390	88 3050	88 2750	94 106			
-10	88 5100	88 3810	88 3440	88 3110	88 2790	96 107				-10	88 5100	88 3820	88 3460	88 3120	88 2810	94 106				-10	88 5100	88 3820	88 3460	88 3120	88 2790	96 107				-10	88 5100	88 3820	88 3460	88 3120	88 2810	94 106			
-5	88 5190	88 3880	88 3510	88 3170	88 2850	96 107				-5	88 5190	88 3890	88 3520	88 3180	88 2860	94 106				-5	88 5190	88 3890	88 3520	88 3180	88 2850	96 107				-5	88 5190	88 3890	88 3520	88 3180	88 2860	94 106			
0	88 5290	88 3950	88 3580	88 3230	88 2910	96 107				0	88 5280	88 3960	88 3590	88 3240	88 2920	94 106				0	88 5280	88 3960	88 3590	88 3240	88 2910	96 107				0	88 5280	88 3960	88 3590	88 3240	88 2920	94 106			
5	88 5380	88 4030	88 3650	88 3290	88 2970	96 107				5	88 5370	88 4030	88 3650	88 3300	88 2980	94 106				5	88 5370	88 4030	88 3650	88 3300	88 3290	96 107				5	88 5370	88 4030	88 3650	88 3300	88 2980	94 106			
10	88 5470	88 4100	88 3710	88 3360	88 3020	96 107				10	88 5470	88 4110	88 3720	88 3370	88 3040	94 106				10	88 5470	88 4110	88 3720	88 3370	88 3290	96 107				10	88 5470	88 4110	88 3720	88 3370	88 3040	94 106			
15	87 5570	87 4180	87 3780	87 3420	87 3080	96 107				15	88 5560	88 4180	88 3790	88 3430	88 3100	94 106				15	88 5560	88 4180	88 3790	88 3430	88 3290	96 107				15	88 5560	88 4180	88 3790	88 3430	88 3100	94 106			
20	87 5600	87 4200	87 3810	87 3440	87 3100	96 107				20	87 5590	87 4210	87 3810	87 3450	87 3120	94 106				20	87 5590	87 4210	87 3810	87 3450	87 3290	96 107				20	87 5590	87 4210	87 3810	87 3450	87 3120	94 106			
25	86 5640	86 4230	86 3830	86 3460	86 3120	96 107				25	87 5620	87 4230	87 3840	87 3470	87 3130	94 106				25	87 5620	87 4230	87 3840	87 3470	87 3290	96 107				25	87 5620	87 4230	87 3840	87 3470	87 3130	94 106			
30	85 5490	85 4120	85 3730	85 3370	85 3040	96 106				30	85 5470	85 4120	85 3730	85 3380	85 3050	94 105				30	85 5470	85 4120	85 3730	85 3380	85 3290	96 107				30	85 5470	85 4120	85 3730	85 3380	85 3050	94 105			
35	82 5300	82 3970	82 3600	82 3250	82 2920	96 106				35	82 5280	82 3970	82 3590	82 3250	82 2930	94 105				35	82 5280	82 3970	82 3590	82 3250	82 3290	96 107				35	82 5280	82 3970	82 3590	82 3250	82 2930	94 105			
40	80 5120	80 3830	80 3460	80 3160	81 2930	96 106				40	80 5090	80 3820	80 3460	80 3120	80 2810	94 105				40	80 5090	80 3820	80 3460	80 3120	80 3290	96 107				40	80 5090	80 3820	80 3460	80 3120	80 2810	94 105			
45	77 4930	80 3890	81 3620	82 3370	83 3120	96 106				45	78 4900	78 3670	78 3380	79 3140	80 2910	94 105				45	78 4900	78 3670	78 3380	79 3140	80 3290	96 107				45	78 4900	78 3670	78 3380	79 3140	80 2910	94 105			
50	78 5060	81 4150	82 3870	83 3590	84 3330	96 106				50	75 4730	79 3870	80 3610	81 3350	82 3100	94 105				50	75 4730	79 3870	80 3610	81 3350	82 3290	96 107				50	75 4730	79 3870	80 3610	81 3350	82 3100	94 105			
54	79 5360	82 4360	83 4060	84 3780	85 3500	96 106				54	77 4980	80 4080	81 3790	82 3520	83 3260	94 105				54	77 4980	80 4080	81 3790	82 3520	83 3290	96 107				54	77 4980	80 4080	81 3790	82 3520	83 3260	94 105			

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 15°
SEA LEVEL****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS										VENR = 168 KIAS										WEIGHT = 13000 LBS										VENR = 167 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT														
-25	89	4820	89	3610	89	3270	89	2950	89	2650	92 105	-25	89	4840	89	3630	89	3290	89	2970	89	2670	91 103																
-20	89	4910	89	3680	89	3330	89	3010	89	2710	92 105	-20	89	4930	89	3710	89	3360	89	3030	89	2730	91 103																
-15	88	5010	88	3760	88	3400	88	3070	88	2770	92 105	-15	89	5020	89	3780	89	3430	89	3100	89	2790	91 103																
-10	88	5100	88	3830	88	3470	88	3140	88	2830	92 105	-10	89	5110	89	3850	89	3490	89	3160	89	2850	91 103																
-5	88	5190	88	3910	88	3540	88	3200	88	2880	92 105	-5	89	5210	89	3930	89	3560	89	3220	89	2910	91 103																
0	88	5280	88	3980	88	3600	88	3260	88	2940	92 105	0	88	5290	88	4000	88	3630	88	3280	88	2960	91 103																
5	88	5370	88	4050	88	3670	88	3320	88	3000	92 105	5	88	5380	88	4070	88	3690	88	3340	88	3020	91 103																
10	88	5470	88	4120	88	3740	88	3380	88	3050	92 105	10	88	5480	88	4140	88	3760	88	3410	88	3080	91 103																
15	88	5560	88	4190	88	3810	88	3450	88	3110	92 105	15	88	5570	88	4210	88	3830	88	3470	88	3140	91 103																
20	87	5590	87	4220	87	3830	87	3470	87	3130	92 105	20	88	5590	88	4230	88	3850	88	3490	88	3150	91 103																
25	87	5620	87	4240	87	3850	87	3490	87	3150	92 104	25	87	5620	87	4250	87	3870	87	3500	87	3170	91 103																
30	85	5460	85	4120	85	3740	85	3380	85	3060	92 104	30	85	5460	85	4130	85	3750	85	3400	85	3070	90 103																
35	83	5270	83	3970	83	3600	83	3250	83	2930	92 103	35	83	5260	83	3970	83	3600	83	3260	83	2950	90 102																
40	80	5070	80	3810	80	3450	80	3120	80	2810	92 103	40	81	5050	81	3810	81	3460	81	3130	81	2820	90 101																
45	78	4870	78	3660	78	3310	78	2990	78	2710	92 103	45	78	4850	78	3660	78	3310	78	2990	78	2690	90 101																
50	75	4690	76	3610	77	3360	78	3120	80	2890	92 103	50	76	4670	76	3510	76	3170	76	2900	77	2680	90 101																
54	74	4640	78	3800	79	3530	80	3280	81	3040	92 103	54	74	4630	75	3530	76	3280	77	3050	78	2820	90 101																

WEIGHT = 12500 LBS								VENR = 167 KIAS								WEIGHT = 12000 LBS								VENR = 166 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2								
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		10 KTS		V1 DIST		20 KTS			30 KTS							
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT						
-25	89	4860	89	3660	89	3320	89	3000	89	2700	90 103	-25	90	4900	90	3700	90	3360	90	3040	90	2750	90 104								
-20	89	4950	89	3740	89	3390	89	3060	89	2760	90 103	-20	89	4990	89	3780	89	3430	89	3100	89	2800	90 104								
-15	89	5050	89	3810	89	3460	89	3130	89	2820	90 103	-15	89	5080	89	3850	89	3500	89	3170	89	2860	90 104								
-10	89	5140	89	3880	89	3530	89	3190	89	2880	90 103	-10	89	5170	89	3920	89	3560	89	3230	89	2920	90 104								
-5	89	5230	89	3960	89	3590	89	3250	89	2940	90 103	-5	89	5260	89	4000	89	3630	89	3290	89	2980	90 104								
0	89	5320	89	4030	89	3660	89	3310	89	2990	90 103	0	89	5350	89	4060	89	3700	89	3350	89	3030	90 104								
5	89	5400	89	4100	89	3720	89	3370	89	3050	90 103	5	89	5440	89	4130	89	3760	89	3410	89	3090	90 104								
10	89	5500	89	4170	89	3790	89	3440	89	3110	90 103	10	89	5530	89	4210	89	3830	89	3480	89	3150	90 104								
15	89	5590	89	4240	89	3860	89	3500	89	3170	90 103	15	89	5620	89	4280	89	3900	89	3540	89	3210	90 104								
20	88	5610	88	4260	88	3870	88	3520	88	3180	89 102	20	88	5640	88	4300	88	3910	88	3550	88	3220	90 103								
25	87	5630	87	4280	87	3890	87	3530	87	3200	89 102	25	88	5660	88	4310	88	3930	88	3570	88	3230	89 102								
30	85	5470	85	4150	85	3770	85	3420	85	3100	89 101	30	86	5490	86	4180	86	3800	86	3450	86	3130	87 100								
35	83	5260	83	3980	83	3620	83	3280	83	2960	89 101	35	83	5270	83	4000	83	3640	83	3300	83	2990	87 99								
40	81	5050	81	3820	81	3460	81	3140	81	2830	88 100	40	81	5050	81	3830	81	3480	81	3150	81	2850	87 99								
45	78	4840	78	3650	78	3310	78	2990	78	2700	88 99	45	79	4840	79	3660	79	3320	79	3000	79	2710	86 98								
50	76	4650	76	3500	76	3170	76	2860	76	2580	88 99	50	76	4640	76	3500	76	3170	76	2870	76	2590	86 98								
54	74	4510	74	3390	74	3070	75	2830	76	2610	88 99	54	74	4490	74	3380	74	3060	74	2760	74	2500	86 97								

WEIGHT = 11500 LBS										VENR = 165 KIAS										WEIGHT = 11000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS				10 KTS		V1 DIST		20 KTS		30 KTS																				
	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT			V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT	V1 KIAS	V1 DIST FT																			
-25	90	4950	90	3750	90	3410	90	3090	90	2810	91	105	-25	90	5010	90	3820	90	3470	90	3150	90	2880	92	106														
-20	90	5040	90	3830	90	3480	90	3150	90	2860	91	105	-20	90	5100	90	3890	90	3540	90	3210	90	2930	92	106														
-15	90	5130	90	3900	90	3550	90	3220	90	2920	91	105	-15	90	5200	90	3970	90	3610	90	3280	90	2990	92	106														
-10	90	5220	90	3970	90	3620	90	3280	90	2970	91	105	-10	90	5290	90	4040	90	3680	90	3340	90	3040	92	106														
-5	90	5310	90	4050	90	3680	90	3340	90	3030	91	105	-5	90	5380	90	4110	90	3750	90	3410	90	3090	92	106														
0	89	5400	89	4120	89	3750	89	3400	89	3080	91	105	0	90	5460	90	4180	90	3810	90	3470	90	3140	92	106														
5	89	5490	89	4190	89	3810	89	3460	89	3140	91	105	5	90	5550	90	4250	90	3880	90	3530	90	3200	92	106														
10	89	5570	89	4260	89	3880	89	3530	89	3200	91	105	10	90	5640	90	4320	90	3940	90	3590	90	3260	92	106														
15	89	5670	89	4330	89	3950	89	3590	89	3260	91	105	15	90	5730	90	4390	90	4010	90	3650	90	3320	92	106														
20	89	5680	89	4340	89	3960	89	3600	89	3270	90	104	20	89	5740	89	4410	89	4020	89	3660	89	3330	91	105														
25	88	5700	88	4360	88	3970	88	3610	88	3280	90	103	25	88	5760	88	4420	88	4030	88	3670	88	3340	90	104														
30	86	5520	86	4210	86	3840	86	3490	86	3160	87	101	30	86	5560	86	4270	86	3890	86	3540	86	3210	88	102														
35	84	5290	84	4030	84	3670	84	3330	84	3020	85	98	35	84	5320	84	4070	84	3710	84	3370	84	3060	85	99														
40	81	5060	81	3850	81	3500	81	3170	81	2870	85	97	40	82	5080	82	3880	82	3530	82	3210	82	2910	83	96														
45	79	4840	79	3670	79	3340	79	3020	79	2740	85	97	45	79	4850	79	3690	79	3360	79	3040	79	2770	82	95														
50	76	4630	76	3510	76	3180	76	2880	76	2610	84	96	50	77	4640	77	3520	77	3200	77	2900	77	2640	82	95														
54	74	4480	74	3390	74	3070	74	2770	74	2520	84	96	54	75	4480	75	3390	75	3080	75	2800	75	2540	82	94														

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 1000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS							WEIGHT = 16000 LBS						
VENR = 170 KIAS							VENR = 170 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	88 5080	88 3760	88 3390	88 3040	88 2730	102 112	-25	88 5070	88 3750	88 3380	88 3040	88 2730	101 111
-20	87 5190	87 3840	87 3460	87 3110	87 2790	102 112	-20	88 5170	88 3830	88 3460	88 3110	88 2790	101 111
-15	87 5290	87 3920	87 3530	87 3180	87 2850	102 112	-15	88 5280	88 3910	88 3530	88 3180	88 2850	101 111
-10	87 5400	87 4000	87 3610	87 3250	87 2920	102 112	-10	87 5380	87 3990	87 3610	87 3250	87 2920	101 111
-5	87 5510	87 4080	87 3690	87 3320	87 2980	102 112	-5	87 5490	87 4080	87 3680	87 3320	87 2980	101 111
0	87 5620	87 4170	87 3760	87 3390	87 3050	102 112	0	87 5600	87 4160	87 3760	87 3390	87 3050	101 111
5	87 5720	87 4250	87 3840	87 3460	87 3110	102 112	5	87 5700	87 4240	87 3830	87 3460	87 3110	101 111
10	87 5830	87 4330	87 3910	87 3530	87 3170	102 112	10	87 5810	87 4320	87 3910	87 3520	87 3170	101 111
15	87 5880	87 4370	87 3950	87 3560	87 3200	102 112	15	87 5860	87 4360	87 3940	87 3560	87 3200	101 111
20	85 5840	85 4340	85 3920	85 3530	86 3200	102 112	20	86 5810	86 4330	86 3910	86 3530	86 3180	101 111
25	84 5770	84 4290	84 3870	85 3590	86 3330	102 112	25	84 5740	84 4280	84 3870	84 3490	85 3210	101 111
30	82 5590	84 4370	85 4080	86 3800	88 3530	102 112	30	82 5570	83 4210	84 3930	85 3680	86 3400	101 111
35	81 5620	85 4640	86 4320	88 4030	89 3750	102 112	35	80 5420	84 4470	85 4170	86 3890	87 3610	101 111
40	83 5990	87 4930	88 4610	89 4290	90 3990	102 112	40	82 5780	85 4750	87 4440	88 4130	89 3840	101 111
45	84 6400	88 5270	89 4920	90 4590	91 4260	102 112	45	83 6160	87 5070	88 4740	89 4410	90 4100	101 111
48	85 6670	89 5490	90 5120	91 4770	92 4440	102 112	50	85 6600	88 5420	89 5060	90 4720	91 4390	101 111
50	86 6860	89 5640	90 5270	91 4910	92 4560	102 112	52	85 6780	89 5580	90 5200	91 4850	92 4510	101 111

WEIGHT = 15500 LBS							WEIGHT = 15000 LBS						
VENR = 169 KIAS							VENR = 169 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	88 5050	88 3750	88 3380	88 3040	88 2730	99 110	-25	88 5040	88 3750	88 3390	88 3050	88 2740	98 109
-20	88 5150	88 3830	88 3460	88 3110	88 2790	99 110	-20	88 5140	88 3830	88 3460	88 3120	88 2800	98 109
-15	88 5260	88 3910	88 3530	88 3180	88 2860	99 110	-15	88 5240	88 3910	88 3530	88 3180	88 2860	98 109
-10	88 5360	88 3990	88 3600	88 3250	88 2920	99 110	-10	88 5340	88 3990	88 3600	88 3250	88 2930	98 109
-5	88 5470	88 4070	88 3680	88 3320	88 2980	99 110	-5	88 5450	88 4070	88 3680	88 3320	88 2990	98 109
0	88 5570	88 4150	88 3750	88 3390	88 3050	99 110	0	88 5550	88 4150	88 3750	88 3390	88 3050	98 109
5	88 5680	88 4230	88 3830	88 3450	88 3110	99 110	5	88 5650	88 4230	88 3830	88 3460	88 3120	98 109
10	87 5780	87 4310	87 3900	87 3520	87 3170	99 110	10	88 5760	88 4310	88 3900	88 3520	88 3180	98 109
15	87 5830	87 4350	87 3930	87 3550	87 3200	99 110	15	87 5800	87 4340	87 3930	87 3550	87 3200	98 108
20	86 5780	86 4310	86 3900	86 3520	86 3170	99 110	20	86 5750	86 4300	86 3900	86 3520	86 3180	98 108
25	84 5710	84 4260	84 3850	84 3480	84 3130	99 110	25	85 5680	85 4250	85 3850	85 3480	85 3130	98 108
30	82 5530	82 4130	82 3730	83 3440	84 3190	99 110	30	82 5490	82 4110	82 3720	82 3360	82 3020	98 108
35	80 5350	82 4190	83 3910	84 3650	85 3390	99 110	35	80 5320	80 3970	81 3670	82 3410	83 3170	98 108
40	80 5420	83 4460	84 4160	86 3870	87 3600	99 110	40	78 5140	81 4180	82 3900	83 3630	85 3370	97 108
45	81 5780	85 4760	86 4440	87 4130	88 3840	99 110	45	79 5420	83 4450	84 4160	85 3870	86 3590	97 108
50	83 6180	86 5080	87 4740	88 4420	89 4100	99 109	50	81 5790	84 4750	85 4430	86 4130	87 3830	97 108
52	83 6350	87 5220	88 4870	89 4540	90 4220	99 109	52	81 5940	85 4880	86 4550	87 4240	88 3940	97 108

WEIGHT = 14500 LBS							WEIGHT = 14000 LBS						
VENR = 168 KIAS							VENR = 167 KIAS						
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S			VR V2 KIAS
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	
-25	88 5030	88 3760	88 3390	88 3060	88 2750	96 107	-25	89 5030	89 3770	89 3410	89 3070	89 2760	94 106
-20	88 5130	88 3830	88 3470	88 3130	88 2810	96 107	-20	89 5130	89 3840	89 3480	89 3140	89 2830	94 106
-15	88 5230	88 3910	88 3540	88 3190	88 2870	96 107	-15	88 5230	88 3920	88 3550	88 3210	88 2890	94 106
-10	88 5330	88 3990	88 3610	88 3260	88 2940	96 107	-10	88 5330	88 4000	88 3620	88 3270	88 2950	94 106
-5	88 5430	88 4070	88 3680	88 3330	88 3000	96 107	-5	88 5430	88 4080	88 3690	88 3340	88 3010	94 106
0	88 5540	88 4150	88 3760	88 3400	88 3060	96 107	0	88 5530	88 4160	88 3770	88 3410	88 3080	94 106
5	88 5640	88 4230	88 3830	88 3460	88 3120	96 107	5	88 5630	88 4230	88 3840	88 3480	88 3140	94 106
10	88 5740	88 4310	88 3900	88 3530	88 3190	96 107	10	88 5730	88 4310	88 3910	88 3540	88 3200	94 106
15	87 5780	87 4340	87 3930	87 3560	87 3210	96 107	15	88 5770	88 4340	88 3940	88 3570	88 3220	94 106
20	86 5730	86 4300	86 3900	86 3520	86 3180	96 107	20	86 5710	86 4300	86 3900	86 3530	86 3190	94 106
25	85 5650	85 4240	85 3840	85 3480	85 3140	96 107	25	85 5630	85 4240	85 3850	85 3480	85 3140	94 105
30	83 5460	83 4100	83 3710	83 3360	83 3020	96 106	30	83 5440	83 4090	83 3710	83 3360	83 3030	94 105
35	80 5280	80 3960	80 3580	80 3240	81 2970	96 106	35	81 5250	81 3950	81 3580	81 3230	81 2910	94 105
40	78 5100	79 3910	80 3650	81 3390	82 3150	96 106	40	78 5070	78 3800	78 3440	79 3170	80 2940	94 105
45	77 5080	80 4170	82 3890	83 3620	84 3360	96 106	45	76 4890	78 3890	79 3630	80 3370	81 3130	94 105
50	79 5420	82 4440	83 4140	84 3850	85 3580	96 106	50	76 5060	80 4150	81 3870	82 3590	83 3330	94 104
52	79 5560	82 4560	83 4250	84 3960	85 3670	96 106	52	77 5200	80 4250	81 3970	82 3690	83 3420	94 104

Figure 7-4 (Sheet 3 of 22)

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
1000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
 LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
 ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
		TAILWIND		ZERO WIND		HEADWINDS								TAILWIND		ZERO WIND		HEADWINDS							
TEMP DEG C		10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25	89	5040	89	3780	89	3420	89	3090	89	2780	92	105	-25	89	5050	89	3800	89	3450	89	3120	89	2810	91	103
-20	89	5130	89	3860	89	3490	89	3160	89	2840	92	105	-20	89	5150	89	3880	89	3520	89	3180	89	2870	91	103
-15	89	5230	89	3930	89	3570	89	3220	89	2910	92	105	-15	89	5240	89	3960	89	3590	89	3250	89	2930	91	103
-10	89	5330	89	4010	89	3640	89	3290	89	2970	92	105	-10	89	5340	89	4030	89	3660	89	3320	89	2990	91	103
-5	89	5430	89	4090	89	3710	89	3360	89	3030	92	105	-5	89	5440	89	4110	89	3730	89	3380	89	3060	91	103
0	89	5530	89	4170	89	3780	89	3430	89	3090	92	105	0	89	5540	89	4190	89	3810	89	3450	89	3120	91	103
5	88	5630	88	4250	88	3860	88	3490	88	3160	92	105	5	89	5640	89	4270	89	3880	89	3520	89	3180	91	103
10	88	5730	88	4320	88	3930	88	3560	88	3220	92	105	10	89	5740	89	4340	89	3950	89	3580	89	3240	91	103
15	88	5760	88	4350	88	3950	88	3580	88	3240	92	105	15	88	5770	88	4370	88	3970	88	3610	88	3260	91	103
20	87	5700	87	4310	87	3910	87	3550	87	3200	92	104	20	87	5710	87	4320	87	3930	87	3560	87	3220	91	103
25	85	5620	85	4240	85	3850	85	3490	85	3150	92	104	25	86	5620	86	4250	86	3870	86	3510	86	3170	90	103
30	83	5420	83	4090	83	3710	83	3360	83	3030	92	103	30	83	5410	83	4100	83	3720	83	3370	83	3050	90	102
35	81	5230	81	3940	81	3580	81	3230	81	2920	92	103	35	81	5220	81	3940	81	3580	81	3240	81	2920	90	102
40	78	5040	78	3790	78	3440	78	3100	78	2790	92	103	40	79	5020	79	3790	79	3430	79	3100	79	2800	90	101
45	76	4860	76	3650	77	3380	78	3140	79	2910	92	103	45	76	4830	76	3640	76	3290	76	2970	77	2710	90	101
50	74	4720	77	3870	78	3600	79	3350	80	3100	92	103	50	74	4660	75	3600	76	3350	77	3110	78	2880	90	101
52	75	4840	78	3970	79	3700	80	3440	81	3190	92	103	52	73	4590	75	3690	76	3430	77	3190	78	2950	90	101

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
		TAILWIND		ZERO WIND		HEADWINDS								TAILWIND		ZERO WIND		HEADWINDS							
TEMP DEG C		10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25	89	5080	89	3840	89	3480	89	3150	89	2840	90	104	-25	90	5110	90	3880	90	3520	90	3190	90	2880	91	104
-20	89	5170	89	3910	89	3550	89	3210	89	2900	90	104	-20	90	5210	90	3950	90	3590	90	3260	90	2940	91	104
-15	89	5270	89	3990	89	3620	89	3280	89	2960	90	104	-15	90	5300	90	4030	90	3660	90	3320	90	3000	91	104
-10	89	5370	89	4070	89	3690	89	3350	89	3030	90	104	-10	90	5400	90	4110	90	3730	90	3390	90	3070	91	105
-5	89	5460	89	4140	89	3770	89	3410	89	3090	90	104	-5	89	5500	89	4180	89	3810	89	3460	89	3130	91	104
0	89	5560	89	4220	89	3840	89	3480	89	3150	90	104	0	89	5600	89	4260	89	3880	89	3520	89	3190	91	104
5	89	5660	89	4300	89	3910	89	3550	89	3210	90	103	5	89	5690	89	4340	89	3950	89	3590	89	3250	91	104
10	89	5760	89	4370	89	3980	89	3610	89	3270	90	103	10	89	5790	89	4410	89	4020	89	3650	89	3310	91	104
15	88	5790	88	4400	88	4000	88	3640	88	3290	90	103	15	89	5820	89	4440	89	4040	89	3670	89	3330	90	104
20	87	5720	87	4350	87	3950	87	3590	87	3250	89	102	20	87	5740	87	4380	87	3990	87	3630	87	3290	89	102
25	86	5620	86	4270	86	3890	86	3530	86	3190	89	101	25	86	5640	86	4300	86	3920	86	3560	86	3220	87	101
30	84	5410	84	4110	84	3730	84	3390	84	3060	89	101	30	84	5420	84	4130	84	3760	84	3410	84	3090	87	99
35	81	5210	81	3950	81	3590	81	3250	81	2930	88	100	35	82	5210	82	3960	82	3600	82	3270	82	2950	87	99
40	79	5010	79	3790	79	3440	79	3110	79	2800	88	100	40	79	5000	79	3790	79	3450	79	3120	79	2820	87	98
45	76	4810	76	3630	76	3290	76	2970	76	2680	88	99	45	77	4800	77	3630	77	3290	77	2980	77	2690	86	98
50	74	4630	74	3490	74	3160	74	2880	75	2670	88	99	50	74	4610	74	3480	74	3160	74	2850	74	2580	86	97
52	73	4560	73	3430	74	3180	75	2950	76	2730	88	99	52	73	4540	73	3430	73	3100	73	2800	73	2530	86	97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS															
		TAILWIND		ZERO WIND		HEADWINDS								TAILWIND		ZERO WIND		HEADWINDS							
TEMP DEG C		10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		VR	V2
		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-25	90	5170	90	3930	90	3570	90	3240	90	2940	92	105	-25	91	5230	91	4000	91	3640	91	3300	91	3010	92	107
-20	90	5260	90	4000	90	3640	90	3310	90	2990	92	105	-20	90	5330	90	4070	90	3710	90	3370	90	3070	92	106
-15	90	5360	90	4080	90	3710	90	3370	90	3050	92	105	-15	90	5420	90	4150	90	3780	90	3440	90	3120	92	107
-10	90	5450	90	4160	90	3790	90	3440	90	3120	92	105	-10	90	5520	90	4230	90	3850	90	3500	90	3180	92	107
-5	90	5550	90	4240	90	3860	90	3510	90	3180	92	105	-5	90	5620	90	4300	90	3930	90	3570	90	3240	92	107
0	90	5650	90	4310	90	3930	90	3580	90	3240	92	105	0	90	5710	90	4380	90	4000	90	3640	90	3310	92	106
5	90	5740	90	4390	90	4000	90	3640	90	3300	92	105	5	90	5810	90	4460	90	4070	90	3710	90	3370	92	106
10	90	5840	90	4470	90	4070	90	3710	90	3360	91	105	10	90	5900	90	4530	90	4140	90	3770	90	3430	92	106
15	89	5860	89	4490	89	4090	89	3720	89	3380	91	105	15	89	5920	89	4550	89	4160	89	3790	89	3440	92	106
20	88	5780	88	4420	88	4030	88	3670	88	3330	89	103	20	88	5840	88	4480	88	4090	88	3730	88	3390	90	104
25	86	5670	86	4340	86	3960	86	3600	86	3260	88	101	25	87	5720	87	4390	87	4010	87	3650	87	3320	88	102
30	84	5450	84	4160	84	3790	84	3440	84	3120	85	99	30	84	5480	84	4200	84	3830	84	3480	84	3160	86	99
35	82	5230	82	3980	82	3630	82	3290	82	2980	85	97	35	82	5250	82	4020	82	3660	82	3320	82	3010	83	95
40	79	5010	79	3810	79	3460	79	3140	79	2840	85	97	40	80	5020	80	3830	80	3490	80	3160	80	2880	82	95
45	77	4800	77	3640	77	3300	77	2990	77	2710	84	96	45	77	4800	77	3650	77	3320	77	3010	77	2740	82	95
50	74	4600	74	3480	74	3160	74	2850	74	2590	84	96	50	75	4600	75	3490	75	3170	75	2870	75	2620	82	94
52	74	4530	74	3420	74	3100	74	2810	74	2550	84	95	52	74	4520	74									

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 2000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 169 KIAS										WEIGHT = 16000 LBS										VENR = 168 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		10 KTS			V1 DIST		10 KTS		20 KTS		30 KTS		10 KTS		V1 DIST			10 KTS		20 KTS		30 KTS								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	VR	V2					
-25	88	5320	88	3940	88	3550	88	3200	88	2870	102	112	-25	88	5310	88	3940	88	3550	88	3200	88	2870	101	111	-20	88	5430	88	4030	88	3630	88	3270	88	2940	101	111	
-15	88	5540	88	4110	88	3710	88	3340	88	3000	102	112	-15	88	5530	88	4100	88	3710	88	3340	88	3000	101	111	-10	88	5660	88	4200	88	3790	88	3420	88	3070	102	112	
-5	88	5780	88	4290	88	3870	88	3490	88	3140	102	112	-5	88	5760	88	4280	88	3870	88	3490	88	3140	101	111	0	88	5900	88	4380	88	3960	88	3570	88	3210	102	112	
5	88	6010	88	4470	88	4040	88	3640	88	3280	102	112	5	88	5990	88	4460	88	4030	88	3640	88	3280	101	111	10	87	6130	87	4550	87	4120	87	3710	87	3350	102	112	
10	87	6130	87	4550	87	4120	87	3710	87	3350	102	112	10	88	6100	88	4540	88	4110	88	3710	88	3340	101	111	15	86	6040	86	4490	86	4060	86	3670	86	3300	102	112	
15	86	6040	86	4490	86	4060	86	3670	86	3300	102	112	15	86	6020	86	4480	86	4050	86	3660	86	3300	101	111	20	84	5910	84	4400	84	3970	85	3650	86	3390	102	112	
20	84	5910	84	4400	84	3970	85	3650	86	3390	102	112	20	84	5890	84	4380	84	3960	84	3580	85	3270	101	111	25	82	5760	84	4420	85	4130	86	3850	87	3590	102	112	
25	82	5760	84	4420	85	4130	86	3850	87	3590	102	112	25	82	5730	82	4270	84	3980	85	3710	86	3450	101	111	30	81	5680	85	4690	86	4380	87	4080	88	3800	102	112	
30	81	5680	85	4690	86	4380	87	4080	88	3800	102	112	30	80	5560	84	4520	85	4220	86	3940	87	3660	101	111	35	82	6040	86	4980	87	4650	88	4340	89	4040	102	112	
35	82	6040	86	4980	87	4650	88	4340	89	4040	102	112	35	81	5820	85	4790	86	4480	87	4180	88	3890	101	111	40	84	6440	87	5310	89	4960	90	4630	91	4300	102	112	
40	84	6440	87	5310	89	4960	90	4630	91	4300	102	112	40	83	6200	86	5110	87	4770	88	4450	89	4140	101	111	45	85	6890	89	5680	90	5300	91	4950	92	4600	102	112	
45	85	6890	89	5680	90	5300	91	4950	92	4600	102	112	45	84	6630	88	5460	89	5100	90	4750	91	4420	101	111	47	86	7080	89	5830	90	5450	91	5080	92	4730	102	112	
47	86	7080	89	5830	90	5450	91	5080	92	4730	102	112	47	85	6810	88	5610	89	5240	90	4880	91	4540	101	111	50	86	7100	89	5850	90	5460	91	5090	92	4740	101	111	

WEIGHT = 15500 LBS										VENR = 168 KIAS										WEIGHT = 15000 LBS										VENR = 167 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S																					
	10 KTS				10 KTS		20 KTS		30 KTS		VR	V2		10 KTS				10 KTS		20 KTS		30 KTS		VR	V2														
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST												
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS														
-25	88	5290	88	3930	88	3550	88	3200	88	2870	99	110	-25	88	5270	88	3930	88	3550	88	3200	88	2880	98	109														
-20	88	5390	88	4010	88	3630	88	3270	88	2940	99	110	-20	88	5380	88	4010	88	3630	88	3270	88	2950	98	109														
-15	88	5500	88	4100	88	3700	88	3340	88	3010	99	110	-15	88	5490	88	4100	88	3710	88	3350	88	3010	98	109														
-10	88	5620	88	4180	88	3780	88	3410	88	3070	99	110	-10	88	5600	88	4180	88	3780	88	3420	88	3080	98	109														
-5	88	5730	88	4270	88	3870	88	3490	88	3140	99	110	-5	88	5710	88	4270	88	3870	88	3490	88	3150	98	109														
0	88	5850	88	4370	88	3950	88	3570	88	3210	99	110	0	88	5830	88	4360	88	3950	88	3570	88	3220	98	109														
5	88	5960	88	4450	88	4030	88	3640	88	3280	99	110	5	88	5940	88	4440	88	4030	88	3640	88	3280	98	109														
10	88	6070	88	4530	88	4100	88	3710	88	3350	99	110	10	88	6040	88	4530	88	4100	88	3710	88	3350	98	109														
15	86	5980	86	4470	86	4050	86	3660	86	3300	99	110	15	87	5950	87	4460	87	4040	87	3650	87	3300	98	108														
20	85	5850	85	4370	85	3950	85	3570	85	3220	99	110	20	85	5810	85	4360	85	3950	85	3570	85	3220	98	108														
25	83	5690	83	4250	83	3840	83	3480	84	3240	99	110	25	83	5650	83	4230	83	3830	83	3460	83	3120	98	108														
30	80	5520	82	4240	83	3960	84	3690	85	3430	99	110	30	81	5480	81	4100	81	3710	82	3460	83	3210	98	108														
35	79	5460	83	4500	84	4210	85	3920	86	3640	99	110	35	78	5300	81	4220	82	3940	83	3670	84	3410	97	108														
40	81	5820	84	4790	85	4470	86	4170	87	3880	99	110	40	78	5450	82	4490	83	4190	84	3900	85	3630	97	108														
45	82	6210	86	5110	87	4780	88	4450	89	4140	99	109	45	80	5810	83	4780	85	4470	86	4160	87	3870	97	108														
50	84	6640	87	5470	88	5110	89	4760	90	4430	99	109	50	82	6210	85	5110	86	4770	87	4440	88	4130	97	108														

WEIGHT = 14500 LBS										VENR = 166 KIAS										WEIGHT = 14000 LBS										VENR = 166 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2														
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS	10 KTS				V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																
-25	89	5260	89	3940	89	3560	89	3210	89	2890	96	107	-25	89	5260	89	3950	89	3570	89	3230	89	2910	94	106														
-20	89	5370	89	4020	89	3640	89	3280	89	2960	96	107	-20	89	5360	89	4030	89	3650	89	3300	89	2970	94	106														
-15	88	5470	88	4100	88	3710	88	3350	88	3020	96	107	-15	89	5470	89	4110	89	3720	89	3370	89	3040	94	106														
-10	88	5580	88	4180	88	3790	88	3430	88	3090	96	107	-10	89	5580	89	4190	89	3800	89	3440	89	3100	94	106														
-5	88	5700	88	4270	88	3870	88	3500	88	3160	96	107	-5	89	5690	89	4280	89	3880	89	3510	89	3170	94	106														
0	88	5810	88	4360	88	3950	88	3580	88	3230	96	107	0	89	5800	89	4370	89	3960	89	3590	89	3240	94	106														
5	88	5920	88	4440	88	4030	88	3650	88	3290	96	107	5	88	5910	88	4450	88	4040	88	3660	88	3310	94	106														
10	88	6020	88	4520	88	4100	88	3720	88	3360	96	107	10	88	6010	88	4530	88	4110	88	3730	88	3370	94	106														
15	87	5930	87	4460	87	4040	87	3660	87	3300	96	107	15	87	5910	87	4460	87	4050	87	3670	87	3310	94	106														
20	85	5790	85	4350	85	3940	85	3570	85	3220	96	107	20	85	5770	85	4340	85	3940	85	3570	85	3230	94	105														
25	83	5620	83	4220	83	3830	83	3460	83	3120	96	106	25	83	5600	83	4220	83	3820	83	3460	83	3120	94	105														
30	81	5440	81	4080	81	3700	81	3340	81	3010	96	106	30	81	5410	81	4070	81	3690	81	3340	81	3010	94	105														
35	79	5270	79	3950	80	3680	81	3430	81	3130	96	106	35	79	5230	79	3930	79	3560	79	3220	80	2970	94	105														
40	76	5100	80	4200	81	3920	82	3650	83	3390	96	106	40	76	5060	78	3920	79	3660	80	3400	81	3160	94	105														
45	78	5440	81	4470	82	4170	83	3890	84	3610	96	106	45	76	5080	79	4180	80	3900	81	3630	82	3370	94	104														
50	79	5810	83	4770	84	4450	85	4150	86	3850	96	106	50	77	5430	80	4450	81	4150	82	3860	83	3590	94	104														

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
2000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 165 KIAS										WEIGHT = 13000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2																
	10 KTS				10 KTS	20 KTS	30 KTS		10 KTS						10 KTS	20 KTS	30 KTS																						
	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST		V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST																						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-25	89	5270	89	3960	89	3590	89	3250	89	2930	92	105	-25	89	5280	89	3980	89	3620	89	3270	89	2950	91	104														
-20	89	5370	89	4040	89	3660	89	3320	89	2990	92	105	-20	89	5380	89	4060	89	3690	89	3340	89	3020	91	104														
-15	89	5470	89	4120	89	3740	89	3390	89	3060	92	105	-15	89	5480	89	4150	89	3760	89	3410	89	3080	91	104														
-10	89	5580	89	4210	89	3820	89	3460	89	3120	92	105	-10	89	5590	89	4230	89	3840	89	3480	89	3150	91	104														
-5	89	5690	89	4290	89	3900	89	3530	89	3190	92	105	-5	89	5700	89	4320	89	3920	89	3560	89	3220	91	104														
0	89	5800	89	4380	89	3980	89	3610	89	3260	92	105	0	89	5810	89	4400	89	4000	89	3630	89	3290	91	104														
5	89	5900	89	4460	89	4050	89	3680	89	3330	92	105	5	89	5910	89	4480	89	4080	89	3700	89	3350	91	104														
10	89	6010	89	4540	89	4130	89	3740	89	3390	92	105	10	89	6010	89	4560	89	4150	89	3770	89	3410	91	104														
15	87	5910	87	4470	87	4060	87	3680	87	3330	92	105	15	87	5910	87	4480	87	4080	87	3700	87	3350	91	103														
20	85	5750	85	4350	85	3950	85	3580	85	3240	92	104	20	86	5750	86	4360	86	3960	86	3600	86	3250	90	103														
25	83	5580	83	4210	83	3830	83	3470	83	3130	92	104	25	84	5570	84	4220	84	3830	84	3480	84	3140	90	102														
30	81	5390	81	4070	81	3690	81	3340	81	3010	92	103	30	81	5380	81	4070	81	3690	81	3350	81	3020	90	102														
35	79	5210	79	3920	79	3560	79	3220	79	2900	92	103	35	79	5190	79	3920	79	3560	79	3220	79	2900	90	101														
40	77	5020	77	3780	77	3420	77	3170	78	2940	92	103	40	77	5000	77	3770	77	3420	77	3090	77	2780	90	101														
45	74	4850	77	3890	78	3630	79	3370	80	3130	92	103	45	74	4820	74	3630	75	3370	76	3130	77	2900	90	101														
50	75	5060	78	4150	79	3870	80	3590	81	3330	92	103	50	73	4710	76	3860	77	3590	78	3340	79	3100	90	101														

WEIGHT = 12500 LBS										VENR = 163 KIAS										WEIGHT = 12000 LBS										VENR = 163 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-25	90	5310	90	4020	90	3650	90	3310	90	2990	91	104	-25	90	5340	90	4060	90	3690	90	3350	90	3030	91	105														
-20	90	5410	90	4100	90	3720	90	3370	90	3050	91	104	-20	90	5440	90	4140	90	3760	90	3420	90	3090	91	105														
-15	90	5510	90	4180	90	3800	90	3440	90	3120	91	104	-15	90	5540	90	4220	90	3840	90	3490	90	3160	91	105														
-10	89	5610	89	4260	89	3870	89	3520	89	3180	91	104	-10	90	5650	90	4300	90	3920	90	3560	90	3220	91	105														
-5	89	5720	89	4350	89	3950	89	3590	89	3250	91	104	-5	90	5760	90	4390	90	4000	90	3630	90	3290	91	105														
0	89	5830	89	4430	89	4040	89	3670	89	3320	91	104	0	90	5870	90	4480	90	4080	90	3710	90	3360	91	105														
5	89	5930	89	4510	89	4110	89	3730	89	3380	91	104	5	90	5970	90	4550	90	4150	90	3780	90	3430	91	105														
10	89	6030	89	4590	89	4180	89	3800	89	3450	91	104	10	90	6070	90	4630	90	4220	90	3840	90	3490	91	105														
15	88	5920	88	4510	88	4100	88	3730	88	3380	89	102	15	88	5950	88	4540	88	4140	88	3760	88	3420	90	103														
20	86	5760	86	4380	86	3980	86	3620	86	3280	89	101	20	86	5770	86	4410	86	4010	86	3650	86	3310	87	101														
25	84	5570	84	4230	84	3850	84	3490	84	3160	89	101	25	84	5580	84	4250	84	3870	84	3520	84	3190	87	100														
30	82	5370	82	4070	82	3700	82	3360	82	3040	88	100	30	82	5370	82	4090	82	3720	82	3380	82	3050	87	99														
35	79	5170	79	3920	79	3560	79	3220	79	2910	88	100	35	80	5170	80	3930	80	3570	80	3240	80	2920	87	98														
40	77	4980	77	3770	77	3420	77	3090	77	2790	88	99	40	77	4970	77	3770	77	3420	77	3100	77	2790	86	98														
45	75	4790	75	3620	75	3280	75	2960	75	2690	88	99	45	75	4770	75	3610	75	3280	75	2960	75	2670	86	97														
50	72	4620	73	3580	74	3330	75	3090	76	2860	88	99	50	72	4600	72	3470	72	3140	73	2860	74	2650	86	97														

WEIGHT = 11500 LBS										VENR = 162 KIAS										WEIGHT = 11000 LBS										VENR = 162 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT							V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																	
-25	90	5400	90	4110	90	3740	90	3400	90	3080	92	106	-25	91	5470	91	4180	91	3810	91	3470	91	3150	93	107														
-20	90	5490	90	4190	90	3820	90	3470	90	3140	92	106	-20	91	5570	91	4260	91	3890	91	3540	91	3210	93	107														
-15	90	5600	90	4270	90	3890	90	3540	90	3210	92	106	-15	91	5670	91	4340	91	3960	91	3610	91	3270	93	107														
-10	90	5700	90	4360	90	3970	90	3610	90	3280	92	106	-10	91	5770	91	4430	91	4040	91	3680	91	3340	93	107														
-5	90	5810	90	4440	90	4050	90	3690	90	3350	92	106	-5	91	5880	91	4510	91	4120	91	3750	91	3410	93	107														
0	90	5920	90	4530	90	4130	90	3760	90	3420	92	106	0	90	5990	90	4600	90	4200	90	3830	90	3480	93	107														
5	90	6020	90	4610	90	4210	90	3830	90	3480	92	106	5	90	6090	90	4680	90	4280	90	3900	90	3550	93	107														
10	90	6110	90	4690	90	4280	90	3900	90	3540	92	106	10	90	6180	90	4760	90	4350	90	3970	90	3610	93	107														
15	88	5990	88	4590	88	4190	88	3810	88	3460	90	104	15	89	6050	89	4650	89	4250	89	3870	89	3520	91	105														
20	86	5810	86	4440	86	4050	86	3690	86	3350	88	102	20	87	5850	87	4500	87	4110	87	3740	87	3400	89	103														
25	84	5600	84	4280	84	3900	84	3550	84	3220	86	99	25	85	5640	85	4330	85	3950	85	3590	85	3260	86	100														
30	82	5380	82	4110	82	3740	82	3400	82	3080	85	98	30	82	5410	82	4140	82	3780	82	3440	82	3120	84	97														
35	80	5170	80	3940	80	3590	80	3250	80	2940	85	97	35	80	5190	80	3970	80	3610	80	3280	80	2970	83	96														
40	77	4960	77	3770	77	3430	77	3110	77	2810	84	96	40	78	4970	78	3790	78	3450	78	3130	78	2840	82	95														
45	75	4760	75	3610	75	3280	75	2970	75	2690	84	96	45	75	4760	75	3620	75	3290	75	2980	75	2720	82	94														
50	73	4580	73	3460	73	3140	73	2840	73	2580	84	95	50	73	4570	73	3470	73	3150	73	2850	73	2600	82	94														

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 3000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 167 KIAS										WEIGHT = 16000 LBS										VENR = 167 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS		V1 DIST		10 KTS		20 KTS		30 KTS		10 KTS			V1 DIST		10 KTS		20 KTS		30 KTS		10 KTS		V1 DIST			10 KTS		20 KTS		30 KTS								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	VR	V2					
-30	88	5460	88	4040	88	3650	88	3290	88	2950	102	112	-30	88	5440	88	4040	88	3650	88	3280	88	2950	101	111	-25	88	5570	88	4130	88	3730	88	3360	88	3020	102	111	
-20	88	5690	88	4220	88	3810	88	3430	88	3090	102	112	-20	88	5670	88	4210	88	3810	88	3430	88	3090	101	111	-15	88	5810	88	4310	88	3890	88	3510	88	3160	102	112	
-15	88	5810	88	4310	88	3890	88	3510	88	3160	102	112	-15	88	5790	88	4300	88	3890	88	3510	88	3160	101	111	-10	88	5930	88	4400	88	3980	88	3590	88	3230	102	112	
-10	88	5930	88	4400	88	3980	88	3590	88	3230	102	112	-10	88	5910	88	4400	88	3970	88	3590	88	3230	101	111	-5	88	6050	88	4500	88	4060	88	3670	88	3300	102	112	
-5	88	6050	88	4500	88	4060	88	3670	88	3300	102	112	-5	88	6030	88	4490	88	4060	88	3670	88	3300	101	111	0	88	6150	88	4570	88	4130	88	3730	88	3360	102	112	
0	88	6150	88	4570	88	4130	88	3730	88	3360	102	112	0	88	6130	88	4560	88	4120	88	3730	88	3360	101	111	5	87	6200	87	4610	87	4170	87	3760	87	3390	102	112	
5	87	6200	87	4610	87	4170	87	3760	87	3390	102	112	5	87	6180	87	4600	87	4160	87	3760	87	3390	101	111	10	86	6210	86	4620	86	4180	86	3770	86	3400	102	112	
10	86	6210	86	4620	86	4180	86	3770	86	3400	102	112	10	86	6190	86	4610	86	4170	86	3770	86	3400	101	111	15	84	6060	84	4510	84	4080	85	3710	86	3450	102	112	
15	84	6060	84	4510	84	4080	85	3710	86	3450	102	112	15	84	6030	84	4500	84	4070	84	3670	85	3330	101	111	20	82	5910	83	4490	84	4190	86	3910	87	3650	102	112	
20	82	5910	83	4490	84	4190	86	3910	87	3650	102	112	20	83	5880	83	4390	83	4040	84	3770	86	3510	101	111	25	80	5750	84	4450	86	4450	87	4150	88	3860	102	112	
25	80	5750	84	4450	86	4450	87	4150	88	3860	102	112	25	80	5720	83	4380	84	4280	86	4000	87	3720	101	111	30	82	6100	86	5040	87	4710	88	4400	89	4100	102	112	
30	82	6100	86	5040	87	4710	88	4400	89	4100	102	112	30	81	5880	84	4850	86	4540	87	4230	88	3940	101	111	35	83	6490	87	5360	88	5010	89	4680	90	4360	102	112	
35	83	6490	87	5360	88	5010	89	4680	90	4360	102	112	35	82	6250	86	5160	87	4820	88	4500	89	4190	101	111	40	85	6930	88	5720	89	5350	90	4990	91	4650	102	112	
40	85	6930	88	5720	89	5350	90	4990	91	4650	102	112	40	83	6670	87	5500	88	5140	89	4800	90	4470	101	111	41	85	7020	89	5800	90	5420	91	5060	92	4710	102	112	
41	85	7020	89	5800	90	5420	91	5060	92	4710	102	112	43	84	6940	88	5730	89	5350	90	4990	91	4650	101	111	43	86	7220	89	5960	90	5570	91	5200	92	4840	102	112	
43	86	7220	89	5960	90	5570	91	5200	92	4840	102	112	45	85	7130	88	5880	89	5500	90	5130	91	4780	101	111	46	85	7230	89	5960	90	5580	91	5200	92	4840	101	111	

WEIGHT = 15500 LBS								VENR = 166 KIAS								WEIGHT = 15000 LBS								VENR = 165 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST			V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS											
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT											
-30	88	5420	88	4030	88	3640	88	3290	88	2950	99	110	-30	89	5400	89	4030	89	3650	89	3290	89	2960	98	109						
-25	88	5530	88	4120	88	3720	88	3360	88	3020	99	110	-25	89	5510	89	4120	89	3720	89	3360	89	3030	98	109						
-20	88	5640	88	4210	88	3800	88	3430	88	3090	99	110	-20	88	5630	88	4200	88	3810	88	3440	88	3100	98	109						
-15	88	5760	88	4300	88	3890	88	3510	88	3160	99	110	-15	88	5740	88	4290	88	3890	88	3510	88	3170	98	109						
-10	88	5880	88	4390	88	3970	88	3590	88	3230	99	110	-10	88	5860	88	4380	88	3970	88	3590	88	3240	98	109						
-5	88	6000	88	4480	88	4050	88	3660	88	3300	99	110	-5	88	5980	88	4470	88	4050	88	3670	88	3310	98	109						
0	88	6090	88	4550	88	4120	88	3720	88	3360	99	110	0	88	6060	88	4540	88	4120	88	3720	88	3360	98	109						
5	87	6140	87	4590	87	4150	87	3750	87	3390	99	110	5	88	6110	88	4580	88	4150	88	3750	88	3390	98	109						
10	87	6150	87	4590	87	4160	87	3760	87	3390	99	110	10	87	6120	87	4580	87	4150	87	3760	87	3390	98	108						
15	85	5990	85	4480	85	4050	85	3670	85	3310	99	110	15	85	5960	85	4460	85	4050	85	3660	85	3300	98	108						
20	83	5840	83	4360	83	3950	83	3570	84	3290	99	110	20	83	5800	83	4350	83	3940	83	3560	83	3210	98	108						
25	81	5670	81	4300	82	4020	84	3750	85	3490	99	110	25	81	5630	81	4220	81	3820	81	3510	83	3260	98	108						
30	79	5520	82	4560	84	4260	85	3980	86	3690	99	110	30	79	5460	80	4270	82	3990	83	3720	84	3460	97	108						
35	80	5870	84	4840	85	4520	86	4220	87	3920	99	110	35	78	5500	82	4540	83	4240	84	3950	85	3670	97	108						
40	82	6250	85	5150	86	4820	87	4490	88	4180	99	110	40	79	5850	83	4820	84	4510	85	4200	86	3910	97	108						
45	83	6670	86	5500	87	5140	88	4800	89	4460	99	109	45	81	6240	84	5140	85	4810	86	4480	87	4170	97	108						
46	83	6770	87	5580	88	5210	89	4860	90	4530	99	109	48	82	6500	85	5360	86	5000	87	4660	88	4340	97	108						
48	84	6960	87	5730	88	5360	89	5000	90	4650	99	109																			

WEIGHT = 14500 LBS								VENR = 165 KIAS				WEIGHT = 14000 LBS								VENR = 164 KIAS					
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR V2		
	10 KTS				10 KTS		20 KTS		30 KTS				10 KTS				10 KTS		20 KTS		30 KTS				
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT
-30	89	5390	89	4040	89	3650	89	3300	89	2970	96	108	-30	89	5390	89	4050	89	3670	89	3310	89	2990	94	106
-25	89	5500	89	4120	89	3730	89	3370	89	3040	96	108	-25	89	5500	89	4130	89	3740	89	3380	89	3050	94	106
-20	89	5610	89	4210	89	3810	89	3450	89	3110	96	108	-20	89	5610	89	4220	89	3820	89	3460	89	3120	94	106
-15	89	5730	89	4300	89	3890	89	3520	89	3180	96	108	-15	89	5720	89	4300	89	3900	89	3530	89	3190	94	106
-10	89	5840	89	4380	89	3970	89	3600	89	3250	96	108	-10	89	5830	89	4390	89	3990	89	3610	89	3260	94	106
-5	89	5960	89	4470	89	4060	89	3670	89	3320	96	108	-5	89	5950	89	4480	89	4070	89	3690	89	3330	94	106
0	88	6040	88	4540	88	4120	88	3730	88	3370	96	107	0	89	6030	89	4550	89	4130	89	3740	89	3380	94	106
5	88	6090	88	4570	88	4150	88	3760	88	3400	96	107	5	88	6070	88	4580	88	4160	88	3770	88	3410	94	106
10	87	6090	87	4580	87	4150	87	3760	87	3400	96	107	10	87	6070	87	4580	87	4160	87	3770	87	3410	94	106
15	85	5930	85	4460	85	4040	85	3660	85	3310	96	107	15	85	5910	85	4450	85	4040	85	3660	85	3310	94	105
20	83	5770	83	4340	83	3930	83	3560	83	3210	96	106	20	83	5740	83	4330	83	3930	83	3560	83	3210	94	105
25	81	5590	81	4200	81	3810	81	3440	81	3110	96	106	25	81	5560	81	4190	81	3800	81	3440	81	3100	94	105
30	79	5420	79	4070	79	3730	80	3480	82	3230	96	106	30	79	5390	79	4050	79	3680	79	3320	79	3010	94	105
35	77	5250	79	4240	81	3960	82	3690	83	3430	96	106	35	77	5220	77	3960	78	3700	79	3440	80	3200	94	105
40	77	5470	81	4510	82	4210	83	3920	84	3650	96	106	40	75	5110	79	4210	80	3930	81	3660	82	3400	94	105
45	79	5830	82	4800	83	4490	84	4180	85	3890	96	106	45	77	5450	80	4480	81	4180	82	3890	83	3620	94	104
48	80	6070	83	5000	84	4670	85	4350	86	4040	96	106	48	78	5660	81	4660	82	4350	83	4050	84	3760	94	104

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
3000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS										VENR = 164 KIAS				WEIGHT = 13000 LBS										VENR = 163 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR V2						
	10 KTS	V1 DIST		10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST			10 KTS	V1 DIST		10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST							
																						KIAS	FT	KIAS	FT	KIAS	FT
-30	89	5400	89	4060	89	3690	89	3330	89	3010	92	105	-30	90	5410	90	4090	90	3710	90	3360	90	3040	91	104		
-25	89	5500	89	4140	89	3760	89	3400	89	3070	92	105	-25	90	5510	90	4170	90	3790	90	3430	90	3100	91	104		
-20	89	5610	89	4230	89	3840	89	3480	89	3140	92	105	-20	90	5620	90	4250	90	3870	90	3500	90	3170	91	104		
-15	89	5720	89	4320	89	3920	89	3550	89	3210	92	105	-15	89	5730	89	4340	89	3950	89	3580	89	3240	91	104		
-10	89	5830	89	4410	89	4000	89	3630	89	3280	92	105	-10	89	5840	89	4430	89	4030	89	3650	89	3310	91	104		
-5	89	5950	89	4490	89	4080	89	3700	89	3350	92	105	-5	89	5960	89	4520	89	4110	89	3730	89	3380	91	104		
0	89	6030	89	4560	89	4140	89	3760	89	3400	92	105	0	89	6040	89	4580	89	4170	89	3780	89	3430	91	104		
5	88	6070	88	4590	88	4170	88	3780	88	3430	92	105	5	88	6070	88	4610	88	4190	88	3810	88	3450	91	103		
10	87	6060	87	4590	87	4170	87	3780	87	3430	92	105	10	88	6060	88	4600	88	4190	88	3800	88	3450	91	103		
15	85	5890	85	4460	85	4050	85	3670	85	3320	92	104	15	86	5890	86	4470	86	4060	86	3690	86	3340	91	103		
20	84	5720	84	4330	84	3930	84	3560	84	3220	92	104	20	84	5710	84	4330	84	3940	84	3570	84	3230	90	102		
25	81	5540	81	4180	81	3800	81	3440	81	3110	92	103	25	82	5520	82	4180	82	3800	82	3450	82	3120	90	102		
30	79	5360	79	4040	79	3670	79	3320	79	3000	92	103	30	79	5340	79	4040	79	3670	79	3320	79	3000	90	101		
35	77	5180	77	3910	77	3540	77	3210	78	2970	92	103	35	77	5160	77	3900	77	3530	77	3200	77	2880	90	101		
40	75	5010	76	3920	77	3660	78	3410	79	3160	92	103	40	75	4980	75	3760	75	3400	76	3160	77	2930	90	101		
45	74	5080	78	4180	79	3900	80	3630	81	3370	92	103	45	73	4810	75	3880	76	3620	77	3370	78	3120	90	101		
48	75	5280	78	4340	79	4040	80	3760	81	3490	92	103	48	73	4910	76	4030	77	3760	78	3500	79	3250	90	101		

WEIGHT = 12500 LBS											VENR = 162 KIAS		WEIGHT = 12000 LBS											VENR = 161 KIAS	
TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND	H E A D W I N D S						VR	V2		
	10 KTS	V1 DIST		10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS	V1 DIST				10 KTS	V1 DIST		20 KTS	V1 DIST	30 KTS	V1 DIST						
																				KIAS	FT			KIAS	FT
-30	90	5440	90	4120	90	3750	90	3400	90	3070	91	105	-30	90	5480	90	4160	90	3790	90	3440	90	3110	92	106
-25	90	5540	90	4200	90	3820	90	3460	90	3130	91	105	-25	90	5580	90	4240	90	3860	90	3510	90	3180	92	106
-20	90	5650	90	4290	90	3900	90	3540	90	3200	91	105	-20	90	5680	90	4330	90	3940	90	3580	90	3250	92	106
-15	90	5760	90	4370	90	3980	90	3610	90	3270	91	105	-15	90	5790	90	4420	90	4020	90	3660	90	3320	92	106
-10	90	5870	90	4460	90	4060	90	3690	90	3340	91	105	-10	90	5900	90	4500	90	4100	90	3730	90	3390	92	106
-5	90	5980	90	4550	90	4140	90	3760	90	3410	91	105	-5	90	6010	90	4590	90	4180	90	3810	90	3460	92	105
0	89	6060	89	4610	89	4200	89	3820	89	3460	91	104	0	90	6090	90	4650	90	4240	90	3860	90	3500	92	105
5	89	6090	89	4640	89	4220	89	3840	89	3480	90	104	5	89	6120	89	4670	89	4260	89	3880	89	3520	91	105
10	88	6080	88	4630	88	4220	88	3830	88	3480	90	103	10	88	6100	88	4660	88	4250	88	3870	88	3520	90	103
15	86	5890	86	4480	86	4080	86	3710	86	3360	89	101	15	86	5910	86	4510	86	4110	86	3740	86	3400	88	101
20	84	5710	84	4340	84	3950	84	3590	84	3250	89	101	20	84	5720	84	4370	84	3980	84	3610	84	3280	87	100
25	82	5510	82	4190	82	3810	82	3460	82	3130	89	100	25	82	5520	82	4200	82	3830	82	3480	82	3150	87	99
30	80	5320	80	4040	80	3670	80	3330	80	3010	88	100	30	80	5320	80	4050	80	3680	80	3340	80	3020	87	99
35	77	5140	77	3890	77	3530	77	3200	77	2890	88	99	35	78	5120	78	3890	78	3540	78	3210	78	2900	86	98
40	75	4950	75	3750	75	3400	75	3070	75	2770	88	99	40	75	4940	75	3740	75	3400	75	3080	75	2770	86	97
45	73	4780	73	3610	74	3350	75	3120	76	2890	88	99	45	73	4760	73	3600	73	3260	73	2950	73	2670	86	97
48	71	4680	74	3740	75	3480	76	3240	77	3000	88	99	48	72	4650	72	3510	72	3220	73	2990	74	2770	86	97

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 4000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 166 KIAS										WEIGHT = 16000 LBS										VENR = 166 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR	V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS								VR	V2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	10 KTS			10 KTS	20 KTS	30 KTS	10 KTS		10 KTS	20 KTS	30 KTS				10 KTS			10 KTS	20 KTS	30 KTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST

WEIGHT = 15500 LBS										VENR = 165 KIAS										WEIGHT = 15000 LBS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND	HEADWINDS						VR	V2																
	10 KTS			20 KTS		30 KTS		10 KTS					20 KTS			30 KTS																							
	V1	DIST		V1	DIST	V1	DIST	V1	DIST				V1	DIST		V1	DIST	V1	DIST	V1	DIST																		
	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		
-30	89	5670	89	4230	89	3820	89	3450	89	3110	99	110	-30	89	5650	89	4230	89	3830	89	3460	89	3110	98	109	-30	89	5650	89	4230	89	3830	89	3460	89	3110	98	109	
-25	89	5790	89	4320	89	3910	89	3530	89	3180	99	110	-25	89	5770	89	4310	89	3910	89	3530	89	3180	98	109	-25	89	5770	89	4310	89	3910	89	3530	89	3180	98	109	
-20	88	5920	88	4410	88	3990	88	3610	88	3250	99	110	-20	89	5890	89	4410	89	3990	89	3610	89	3260	98	109	-20	89	5890	89	4410	89	3990	89	3610	89	3260	98	109	
-15	88	6040	88	4510	88	4080	88	3690	88	3330	99	110	-15	89	6020	89	4510	89	4080	89	3690	89	3330	98	109	-15	89	6020	89	4510	89	4080	89	3690	89	3330	98	109	
-10	88	6160	88	4600	88	4170	88	3770	88	3400	99	110	-10	89	6140	89	4600	89	4170	89	3770	89	3400	98	109	-10	89	6140	89	4600	89	4170	89	3770	89	3400	98	109	
-5	88	6280	88	4690	88	4250	88	3840	88	3470	99	110	-5	88	6260	88	4690	88	4250	88	3850	88	3470	98	109	-5	88	6260	88	4690	88	4250	88	3850	88	3470	98	109	
0	87	6290	87	4700	87	4260	87	3850	87	3480	99	110	0	88	6260	88	4690	88	4260	88	3850	88	3480	98	109	0	88	6260	88	4690	88	4260	88	3850	88	3480	98	109	
5	86	6270	86	4690	86	4250	86	3840	86	3470	99	110	5	87	6240	87	4680	87	4240	87	3840	87	3470	98	108	5	87	6240	87	4680	87	4240	87	3840	87	3470	98	108	
10	85	6160	85	4610	85	4170	85	3770	85	3410	99	110	10	85	6120	85	4590	85	4160	85	3770	85	3400	98	108	10	85	6120	85	4590	85	4160	85	3770	85	3400	98	108	
15	83	5990	83	4480	83	4060	83	3670	83	3350	99	110	15	83	5950	83	4460	83	4040	83	3660	83	3300	98	108	15	83	5950	83	4460	83	4040	83	3660	83	3300	98	108	
20	81	5820	81	4360	82	4080	83	3810	84	3540	99	110	20	81	5780	81	4330	81	3930	81	3570	82	3320	98	108	20	81	5780	81	4330	81	3930	81	3570	82	3320	98	108	
25	79	5660	82	4620	83	4320	84	4040	86	3760	99	110	25	79	5610	80	4330	81	4050	82	3780	83	3510	98	108	25	79	5610	80	4330	81	4050	82	3780	83	3510	98	108	
30	80	5930	83	4900	85	4580	86	4280	87	3980	99	110	30	78	5560	81	4590	82	4300	84	4010	85	3730	97	108	30	78	5560	81	4590	82	4300	84	4010	85	3730	97	108	
35	81	6300	85	5210	86	4870	87	4550	88	4230	99	110	35	79	5910	83	4870	84	4560	85	4250	86	3960	97	108	35	79	5910	83	4870	84	4560	85	4250	86	3960	97	108	
40	82	6720	86	5550	87	5190	88	4840	89	4510	99	109	40	80	6280	84	5190	85	4850	86	4520	87	4210	97	108	40	80	6280	84	5190	85	4850	86	4520	87	4210	97	108	
43	83	6990	87	5780	88	5400	89	5040	90	4690	99	109	45	82	6710	85	5540	86	5180	87	4830	88	4500	97	108	45	82	6710	85	5540	86	5180	87	4830	88	4500	97	108	
45	84	7190	87	5930	88	5550	89	5180	90	4820	99	109	46	82	6810	85	5620	86	5250	87	4900	88	4560	97	108	46	82	6810	85	5620	86	5250	87	4900	88	4560	97	108	
46	84	7290	88	6020	88	5630	89	5250	90	4890	99	109																											

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 15°
4000 FEET****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS															
VENR = 162 KIAS										VENR = 161 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-30	90	5640	90	4260	90	3860	90	3500	90	3160	92	105	-30	90	5660	90	4280	90	3890	90	3530	90	3190	91	104
-25	89	5750	89	4340	89	3940	89	3570	89	3230	92	105	-25	90	5760	90	4370	90	3970	90	3600	90	3260	91	104
-20	89	5870	89	4430	89	4030	89	3650	89	3300	92	105	-20	90	5880	90	4460	90	4050	90	3680	90	3330	91	104
-15	89	5990	89	4530	89	4120	89	3730	89	3380	92	105	-15	90	6000	90	4550	90	4140	90	3760	90	3410	91	104
-10	89	6100	89	4620	89	4200	89	3810	89	3450	92	105	-10	90	6110	90	4640	90	4220	90	3830	90	3480	91	104
-5	89	6220	89	4700	89	4280	89	3880	89	3520	92	105	-5	89	6220	89	4730	89	4300	89	3910	89	3540	91	104
0	88	6210	88	4700	88	4280	88	3880	88	3520	92	105	0	89	6220	89	4720	89	4300	89	3910	89	3540	91	104
5	87	6180	87	4680	87	4250	87	3860	87	3500	92	105	5	88	6180	88	4690	88	4270	88	3880	88	3520	91	103
10	86	6050	86	4580	86	4170	86	3780	86	3420	92	104	10	86	6050	86	4590	86	4180	86	3800	86	3440	91	103
15	84	5870	84	4440	84	4030	84	3660	84	3310	92	104	15	84	5850	84	4440	84	4040	84	3670	84	3320	90	102
20	82	5680	82	4300	82	3900	82	3540	82	3200	92	103	20	82	5670	82	4300	82	3910	82	3540	82	3210	90	102
25	79	5510	79	4160	79	3780	79	3420	79	3090	92	103	25	80	5480	80	4150	80	3770	80	3420	80	3090	90	101
30	77	5330	77	4030	77	3650	77	3300	78	3020	92	103	30	78	5300	78	4020	78	3650	78	3300	78	2980	90	101
35	75	5170	76	3960	77	3700	78	3440	79	3200	92	103	35	75	5140	75	3880	75	3520	76	3200	77	2970	90	101
40	74	5110	77	4210	78	3930	79	3660	80	3400	92	103	40	73	4970	75	3910	76	3650	77	3400	78	3150	90	101
45	75	5450	79	4480	79	4180	80	3900	81	3620	92	103	45	73	5060	76	4170	77	3890	78	3620	79	3360	90	101
46	76	5520	79	4540	80	4240	81	3950	82	3670	92	103	46	73	5130	76	4220	77	3940	78	3660	79	3400	90	101

WEIGHT = 12500 LBS										WEIGHT = 12000 LBS															
VENR = 161 KIAS										VENR = 160 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-30	90	5680	90	4310	90	3920	90	3560	90	3230	92	105	-30	91	5720	91	4360	91	3970	91	3610	91	3270	92	106
-25	90	5790	90	4400	90	4000	90	3630	90	3290	92	105	-25	90	5830	90	4440	90	4050	90	3680	90	3340	92	106
-20	90	5910	90	4490	90	4090	90	3710	90	3370	92	105	-20	90	5940	90	4530	90	4130	90	3760	90	3410	92	106
-15	90	6020	90	4580	90	4170	90	3790	90	3440	92	105	-15	90	6060	90	4630	90	4220	90	3840	90	3490	92	106
-10	90	6130	90	4670	90	4250	90	3870	90	3510	92	105	-10	90	6170	90	4710	90	4300	90	3910	90	3550	92	106
-5	90	6240	90	4760	90	4330	90	3940	90	3580	92	105	-5	90	6280	90	4800	90	4380	90	3990	90	3620	92	106
0	89	6230	89	4750	89	4330	89	3940	89	3570	91	104	0	89	6260	89	4790	89	4370	89	3980	89	3620	91	105
5	88	6190	88	4720	88	4300	88	3910	88	3550	89	103	5	88	6220	88	4750	88	4340	88	3950	88	3590	90	104
10	86	6050	86	4610	86	4200	86	3820	86	3470	89	102	10	86	6070	86	4640	86	4230	86	3850	86	3500	88	101
15	84	5850	84	4460	84	4060	84	3690	84	3340	89	101	15	84	5860	84	4480	84	4080	84	3710	84	3370	87	100
20	82	5660	82	4300	82	3920	82	3560	82	3220	89	100	20	82	5660	82	4320	82	3930	82	3570	82	3240	87	99
25	80	5470	80	4150	80	3780	80	3430	80	3100	88	100	25	80	5460	80	4160	80	3790	80	3440	80	3120	87	99
30	78	5280	78	4010	78	3640	78	3300	78	2980	88	99	30	78	5270	78	4010	78	3650	78	3310	78	2990	86	98
35	76	5110	76	3870	76	3520	76	3180	76	2870	88	99	35	76	5090	76	3870	76	3520	76	3190	76	2880	86	98
40	73	4940	73	3740	73	3390	74	3150	75	2920	88	99	40	74	4920	74	3730	74	3380	74	3060	74	2760	86	97
45	71	4770	74	3860	75	3600	76	3350	77	3110	88	99	45	71	4740	71	3590	72	3330	73	3090	74	2870	86	97
46	71	4760	74	3910	75	3650	76	3390	77	3150	88	99	46	71	4710	71	3620	72	3370	73	3130	74	2900	86	97

WEIGHT = 11500 LBS										WEIGHT = 11000 LBS															
VENR = 159 KIAS										VENR = 159 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-30	91	5780	91	4420	91	4030	91	3660	91	3330	93	107	-30	91	5850	91	4490	91	4100	91	3730	91	3390	94	108
-25	91	5880	91	4500	91	4100	91	3740	91	3390	93	107	-25	91	5950	91	4570	91	4180	91	3810	91	3460	94	108
-20	91	6000	91	4590	91	4190	91	3820	91	3470	93	107	-20	91	6070	91	4670	91	4260	91	3890	91	3540	94	108
-15	91	6110	91	4690	91	4280	91	3900	91	3540	93	107	-15	91	6190	91	4760	91	4350	91	3970	91	3610	94	108
-10	90	6220	90	4770	90	4360	90	3970	90	3610	93	107	-10	91	6290	91	4850	91	4430	91	4040	91	3680	94	108
-5	90	6330	90	4860	90	4440	90	4040	90	3680	93	107	-5	91	6400	91	4930	91	4510	91	4120	91	3750	94	108
0	90	6310	90	4840	90	4420	90	4030	90	3670	92	106	0	90	6370	90	4910	90	4490	90	4100	90	3740	93	107
5	88	6260	88	4800	88	4380	88	4000	88	3640	91	104	5	89	6310	89	4870	89	4450	89	4060	89	3700	91	106
10	87	6100	87	4680	87	4270	87	3890	87	3540	89	102	10	87	6150	87	4740	87	4330	87	3950	87	3590	89	103
15	85	5880	85	4510	85	4110	85	3750	85	3400	86	100	15	85	5920	85	4550	85	4160	85	3790	85	3450	87	101
20	83	5670	83	4340	83	3960	83	3600	83	3270	85	98	20	83	5700	83	4380	83	3990	83	3640	83	3300	84	98
25	80	5470	80	4180	80	3810	80	3460	80	3140	85	97	25	81	5480	81	4210	81	3840	81	3490	81	3170	83	96
30	78	5270	78	4020	78	3660	78	3320	78	3010	85	97	30	79	5280	79	4040	79	3680	79	3350	79	3030	82	95
35	76	5080	76	3870	76	3520	76	3190	76	2890	84	96	35	76	5080	76	3880	76	3530	76	3210	76	2910	82	95
40	74	4900	74	3720	74	3380	74	3060	74	2770	84	96	40	74	4890	74	3730	74	3390	74	3070	74	2790	82	94
45	72	4720	72	3580	72	3250	72	2940	72	2660	84	95	45	72	4710	72	3580	72	3250	72	2940	72	2680	82	94
46	71	4690	71	3550	71	3220	71	2910	71	2680	84	95	46	71	4670	71	3550	71	3220	71	2920	71	2660	82	94

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 5000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS									
VENR = 165 KIAS										VENR = 164 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS							TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2						10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2		
-35	89 5910	89 4380	89 3960	89 3570	89 3210	102	112	-35	89 5890	89 4380	89 3960	89 3570	89 3220	101	111				
-30	89 6030	89 4480	89 4050	89 3650	89 3290	102	112	-30	89 6010	89 4470	89 4040	89 3650	89 3290	101	111				
-25	89 6150	89 4570	89 4130	89 3730	89 3360	102	112	-25	89 6130	89 4560	89 4130	89 3730	89 3360	101	111				
-20	88 6280	88 4660	88 4220	88 3810	88 3430	102	112	-20	89 6250	89 4650	89 4210	89 3800	89 3430	101	111				
-15	88 6370	88 4730	88 4280	88 3860	88 3480	102	112	-15	88 6340	88 4720	88 4270	88 3860	88 3480	101	111				
-10	87 6410	87 4760	87 4310	87 3890	87 3510	102	112	-10	88 6380	88 4750	88 4300	88 3890	88 3510	101	111				
-5	87 6430	87 4780	87 4330	87 3910	87 3530	102	112	-5	87 6410	87 4770	87 4320	87 3910	87 3520	101	111				
0	86 6400	86 4760	86 4310	86 3890	86 3510	102	112	0	86 6370	86 4750	86 4300	86 3880	86 3500	101	111				
5	84 6350	84 4730	84 4280	84 3870	85 3590	102	112	5	85 6320	85 4720	85 4270	85 3860	85 3480	101	111				
10	83 6200	83 4640	84 4340	85 4060	86 3790	102	112	10	83 6170	83 4600	83 4190	84 3910	85 3640	101	111				
15	81 6050	84 4910	85 4590	86 4290	87 4000	102	112	15	81 6010	83 4730	84 4420	85 4130	86 3850	101	111				
20	81 6260	85 5190	86 4860	87 4540	88 4230	102	112	20	80 6030	84 5000	85 4680	86 4370	87 4070	101	111				
25	82 6640	86 5510	87 5160	88 4820	90 4490	102	112	25	81 6400	85 5300	86 4960	87 4630	88 4320	101	111				
30	84 7070	87 5850	89 5480	90 5120	91 4780	102	112	30	83 6800	86 5630	87 5270	88 4930	89 4590	101	111				
33	84 7340	88 6080	89 5690	90 5320	91 4960	102	112	35	84 7250	87 6000	89 5620	90 5250	91 4890	101	111				
35	85 7540	89 6240	90 5840	91 5460	92 5090	102	112	39	85 7640	88 6320	90 5920	90 5530	91 5160	101	111				

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 164 KIAS										VENR = 163 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS							TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	HEADWINDS						
			10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2						10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT	VR	V2		
-35	89 5860	89 4370	89 3960	89 3570	89 3220	99	110	-35	89 5840	89 4370	89 3960	89 3580	89 3230	98	109				
-30	89 5980	89 4460	89 4040	89 3650	89 3290	99	110	-30	89 5960	89 4460	89 4040	89 3650	89 3300	98	109				
-25	89 6100	89 4550	89 4120	89 3730	89 3360	99	110	-25	89 6080	89 4550	89 4120	89 3730	89 3370	98	109				
-20	89 6220	89 4640	89 4210	89 3800	89 3430	99	110	-20	89 6200	89 4640	89 4210	89 3810	89 3440	98	109				
-15	88 6310	88 4710	88 4270	88 3860	88 3480	99	110	-15	89 6280	89 4700	89 4270	89 3860	89 3490	98	109				
-10	88 6340	88 4740	88 4290	88 3890	88 3510	99	110	-10	88 6310	88 4730	88 4290	88 3890	88 3510	98	109				
-5	87 6370	87 4760	87 4310	87 3900	87 3520	99	110	-5	87 6330	87 4750	87 4300	87 3900	87 3520	98	109				
0	86 6320	86 4730	86 4280	86 3880	86 3500	99	110	0	86 6290	86 4710	86 4280	86 3870	86 3500	98	108				
5	85 6280	85 4700	85 4250	85 3850	85 3470	99	110	5	85 6240	85 4680	85 4240	85 3840	85 3470	98	108				
10	83 6120	83 4580	83 4150	83 3750	83 3420	99	110	10	83 6080	83 4560	83 4140	83 3740	83 3380	98	108				
15	81 5960	81 4460	82 4150	83 3880	84 3610	99	110	15	81 5920	81 4440	81 4030	81 3640	82 3380	98	108				
20	79 5810	82 4690	83 4390	84 4100	85 3820	99	110	20	79 5760	80 4400	81 4110	82 3840	83 3570	98	108				
25	79 6000	83 4970	84 4650	85 4340	86 4050	99	110	25	77 5620	81 4660	82 4360	83 4070	84 3780	97	108				
30	81 6370	84 5270	85 4940	86 4610	87 4300	99	110	30	79 5970	82 4930	83 4620	84 4310	85 4010	97	108				
35	82 6780	85 5610	87 5250	88 4900	88 4570	99	109	35	80 6340	83 5250	84 4910	85 4580	86 4270	97	108				
39	83 7140	86 5910	87 5530	88 5170	89 4810	99	109	40	81 6760	85 5590	86 5230	87 4880	88 4550	97	108				
40	83 7240	87 5990	88 5600	89 5230	90 4880	99	109	42	82 6950	85 5740	86 5370	87 5010	88 4670	97	108				
42	84 7440	87 6150	88 5760	89 5380	90 5010	99	109	44	83 7140	86 5900	87 5520	88 5150	88 4800	97	108				

WEIGHT = 14500 LBS										VENR = 162 KIAS										WEIGHT = 14000 LBS										VENR = 162 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR	V2														
	10 KTS				10 KTS		20 KTS		30 KTS					10 KTS				10 KTS		20 KTS		30 KTS																	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST				V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT											
-35	90	5830	90	4370	90	3970	90	3590	90	3240	96	108	-35	90	5830	90	4380	90	3980	90	3600	90	3260	94	107														
-30	90	5950	90	4460	90	4050	90	3660	90	3310	96	108	-30	90	5940	90	4470	90	4060	90	3680	90	3330	94	107														
-25	89	6060	89	4550	89	4130	89	3740	89	3380	96	108	-25	90	6050	90	4560	90	4140	90	3750	90	3390	94	106														
-20	89	6180	89	4640	89	4210	89	3810	89	3450	96	108	-20	89	6170	89	4650	89	4220	89	3830	89	3460	94	106														
-15	89	6260	89	4700	89	4270	89	3870	89	3500	96	108	-15	89	6240	89	4710	89	4280	89	3880	89	3510	94	106														
-10	88	6290	88	4730	88	4290	88	3890	88	3520	96	107	-10	88	6270	88	4730	88	4300	88	3900	88	3530	94	106														
-5	87	6300	87	4740	87	4300	87	3900	87	3530	96	107	-5	88	6290	88	4740	88	4310	88	3910	88	3540	94	106														
0	86	6260	86	4710	86	4270	86	3870	86	3500	96	107	0	86	6230	86	4700	86	4270	86	3880	86	3510	94	106														
5	85	6200	85	4670	85	4240	85	3840	85	3470	96	107	5	85	6180	85	4660	85	4240	85	3840	85	3480	94	105														
10	83	6040	83	4550	83	4130	83	3740	83	3380	96	106	10	83	6010	83	4540	83	4120	83	3740	83	3380	94	105														
15	81	5880	81	4420	81	4010	81	3630	81	3280	96	106	15	81	5840	81	4410	81	4000	81	3630	81	3280	94	105														
20	79	5720	79	4300	79	3900	80	3590	81	3340	96	106	20	79	5680	79	4280	79	3890	79	3520	79	3180	94	105														
25	77	5560	79	4350	80	4070	81	3800	82	3540	96	106	25	77	5520	77	4160	78	3800	79	3540	80	3290	94	105														
30	76	5580	80	4620	81	4320	82	4020	83	3750	96	106	30	75	5360	78	4300	79	4020	80	3750	81	3490	94	105														
35	78	5930	81	4900	82	4580	83	4270	84	3980	96	106	35	76	5530	79	4570	80	4270	81	3980	82	3700	94	104														
40	79	6310	83	5220	84	4880	84	4550	85	4240	96	106	40	77	5890	80	4860	81	4540	82	4240	83	3940	94	104														
44	80	6650	84	5500	85	5140	85	4800	86	4470	96	106	44	78	6200	81	5120	82	4780	83	4460	84	4150	94	104														

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
5000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS												WEIGHT = 13000 LBS																										
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS												
						10 KTS		20 KTS		30 KTS																												
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																											
-35	90	5830	90	4400	90	4000	90	3620	90	3280	92	105	-35	91	5850	91	4430	91	4030	91	3650	91	3310	92	105	-35	91	5850	91	4430	91	4030	91	3650	91	3310	92	105
-30	90	5940	90	4490	90	4080	90	3700	90	3350	92	105	-30	90	5960	90	4520	90	4110	90	3730	90	3380	92	105	-30	90	5960	90	4520	90	4110	90	3730	90	3380	92	105
-25	90	6050	90	4580	90	4160	90	3770	90	3420	92	105	-25	90	6070	90	4600	90	4190	90	3800	90	3450	92	105	-25	90	6070	90	4600	90	4190	90	3800	90	3450	92	105
-20	90	6170	90	4660	90	4240	90	3850	90	3490	92	105	-20	90	6180	90	4690	90	4270	90	3880	90	3510	92	105	-20	90	6180	90	4690	90	4270	90	3880	90	3510	92	105
-15	89	6240	89	4720	89	4290	89	3900	89	3530	92	105	-15	90	6250	90	4740	90	4320	90	3930	90	3560	91	104	-15	89	6240	89	4720	89	4290	89	3900	89	3560	91	104
-10	89	6270	89	4740	89	4310	89	3920	89	3550	92	105	-10	89	6270	89	4760	89	4340	89	3940	89	3580	91	104	-10	89	6270	89	4760	89	4340	89	3940	89	3580	91	104
-5	88	6280	88	4750	88	4320	88	3920	88	3560	92	105	-5	88	6280	88	4770	88	4340	88	3950	88	3580	91	103	-5	88	6280	88	4770	88	4340	88	3950	88	3580	91	103
0	87	6220	87	4710	87	4280	87	3890	87	3520	92	104	0	87	6220	87	4720	87	4300	87	3910	87	3540	91	103	0	87	6220	87	4720	87	4300	87	3910	87	3540	91	103
5	86	6160	86	4670	86	4240	86	3850	86	3490	92	104	5	86	6150	86	4670	86	4260	86	3870	86	3510	91	103	5	86	6150	86	4670	86	4260	86	3870	86	3510	91	103
10	84	5990	84	4530	84	4120	84	3740	84	3390	92	104	10	84	5970	84	4540	84	4130	84	3750	84	3400	90	102	10	84	5970	84	4540	84	4130	84	3750	84	3400	90	102
15	82	5820	82	4400	82	4000	82	3630	82	3280	92	103	15	82	5800	82	4400	82	4000	82	3630	82	3290	90	102	15	82	5800	82	4400	82	4000	82	3630	82	3290	90	102
20	80	5650	80	4270	80	3880	80	3520	80	3180	92	103	20	80	5620	80	4270	80	3880	80	3520	80	3180	90	101	20	80	5620	80	4270	80	3880	80	3520	80	3180	90	101
25	78	5480	78	4140	78	3760	78	3410	78	3080	92	103	25	78	5450	78	4130	78	3760	78	3400	78	3080	90	101	25	78	5450	78	4130	78	3760	78	3400	78	3080	90	101
30	76	5320	76	4020	77	3750	78	3490	79	3250	92	103	30	76	5290	76	4000	76	3630	76	3290	76	3010	90	101	30	76	5290	76	4000	76	3630	76	3290	76	3010	90	101
35	73	5160	77	4250	78	3980	79	3710	80	3450	92	103	35	74	5130	74	3950	75	3690	76	3440	77	3200	90	101	35	74	5130	74	3950	75	3690	76	3440	77	3200	90	101
40	75	5480	78	4520	79	4220	80	3940	81	3660	92	103	40	72	5100	76	4200	77	3920	78	3660	79	3400	90	101	40	72	5100	76	4200	77	3920	78	3660	79	3400	90	101
44	76	5770	79	4760	80	4440	81	4140	82	3850	92	103	44	74	5360	77	4420	78	4120	79	3840	79	3570	90	101	44	74	5360	77	4420	78	4120	79	3840	79	3570	90	101

WEIGHT = 12500 LBS												WEIGHT = 12000 LBS																										
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS												
						10 KTS		20 KTS		30 KTS																												
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																											
-35	91	5870	91	4460	91	4060	91	3690	91	3350	92	106	-35	91	5910	91	4510	91	4110	91	3740	91	3390	93	107	-35	91	5910	91	4510	91	4110	91	3740	91	3390	93	107
-30	91	5980	91	4550	91	4140	91	3770	91	3410	92	106	-30	91	6020	91	4600	91	4190	91	3810	91	3460	93	107	-30	91	6020	91	4600	91	4190	91	3810	91	3460	93	107
-25	90	6090	90	4640	90	4220	90	3840	90	3480	92	106	-25	91	6130	91	4680	91	4270	91	3890	91	3530	93	107	-25	91	6130	91	4680	91	4270	91	3890	91	3530	93	107
-20	90	6200	90	4720	90	4300	90	3910	90	3550	92	106	-20	91	6240	91	4770	91	4350	91	3960	91	3600	93	107	-20	91	6240	91	4770	91	4350	91	3960	91	3600	93	107
-15	90	6270	90	4780	90	4350	90	3960	90	3600	92	105	-15	90	6300	90	4820	90	4400	90	4010	90	3640	92	106	-15	90	6300	90	4820	90	4400	90	4010	90	3640	92	106
-10	89	6290	89	4790	89	4370	89	3970	89	3610	91	104	-10	90	6320	90	4830	90	4410	90	4020	90	3650	92	105	-10	90	6320	90	4830	90	4410	90	4020	90	3650	92	105
-5	88	6290	88	4790	88	4370	88	3980	88	3610	90	103	-5	89	6320	89	4830	89	4410	89	4020	89	3650	91	104	-5	89	6320	89	4830	89	4410	89	4020	89	3650	91	104
0	87	6220	87	4740	87	4320	87	3930	87	3570	89	102	0	88	6240	88	4780	88	4360	88	3970	88	3610	89	103	0	88	6240	88	4780	88	4360	88	3970	88	3610	89	103
5	86	6150	86	4690	86	4280	86	3890	86	3530	89	102	5	86	6170	86	4720	86	4310	86	3920	86	3560	88	101	5	86	6170	86	4720	86	4310	86	3920	86	3560	88	101
10	84	5970	84	4550	84	4140	84	3770	84	3420	89	101	10	84	5980	84	4570	84	4170	84	3790	84	3440	87	100	10	84	5980	84	4570	84	4170	84	3790	84	3440	87	100
15	82	5790	82	4410	82	4010	82	3640	82	3300	89	101	15	82	5790	82	4420	82	4030	82	3660	82	3320	87	99	15	82	5790	82	4420	82	4030	82	3660	82	3320	87	99
20	80	5610	80	4270	80	3880	80	3520	80	3190	88	100	20	80	5600	80	4270	80	3890	80	3540	80	3210	87	99	20	80	5600	80	4270	80	3890	80	3540	80	3210	87	99
25	78	5430	78	4130	78	3750	78	3400	78	3080	88	100	25	78	5420	78	4130	78	3760	78	3410	78	3090	86	98	25	78	5420	78	4130	78	3760	78	3410	78	3090	86	98
30	76	5260	76	3990	76	3630	76	3290	76	2970	88	99	30	76	5240	76	3990	76	3630	76	3290	76	2980	86	98	30	76	5240	76	3990	76	3630	76	2980	86	98		
35	74	5090	74	3860	74	3500	74	3190	75	2960	88	99	35	74	5070	74	3850	74	3500	74	3170	74	2860	86	97	35	74	5070	74	3850	74	3500	74	3170	74	2860	86	97
40	72	4930	73	3900	74	3630	75	3380	76	3140	88	99	40	72	4900	72	3720	72	3370	73	3130	74	2900	86	97	40	72	4900	72	3720	72	3370	73	3130	74	2900	86	97
44	71	4980	74	4090	75	3820	76	3560	77	3310	88	99	44	70	4770	72	3790	73	3530	74	3280	75	3050	86	97	44	70	4770	72	3790	73	3530	74	3280	75	3050	86	97

WEIGHT = 11500 LBS												WEIGHT = 11000 LBS																										
TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS		TEMP DEG C		TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR V2 KIAS												
						10 KTS		20 KTS		30 KTS																												
						V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																											
-35	92	5970	92	4570	92	4170	92	3800	92	3450	94	108	-35	92	6050	92	4650	92	4250	92	3870	92	3520	95	109	-35	92	6050	92	4650	92	4250	92	3870	92	3520	95	109
-30	91	6080	91	4660	91	4250	91	3870	91	3520	94	108	-30	92	6160	92	4740	92	4330	92	3950	92	3590	95	109	-30	92	6160	92	4740	92	4330	92	3950				

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 6000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										VENR = 164 KIAS										WEIGHT = 16000 LBS										VENR = 163 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS				VR	V2	KIAS	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS										
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS					V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS					20 KTS	30 KTS													
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT					KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS
-35	89	6240	89	4630	89	4190	89	3780	89	3410	102	112	-35	90	6220	90	4630	90	4180	90	3780	90	3410	101	112	-30	89	6370	89	4730	89	4280	89	3860	89	3480	101	112	
-25	89	6480	89	4820	89	4360	89	3940	89	3550	102	112	-25	89	6460	89	4810	89	4350	89	3930	89	3550	101	112	-20	89	6600	89	4900	89	4440	89	4010	89	3620	101	111	
-15	88	6580	88	4890	88	4430	88	4000	88	3610	102	112	-15	88	6560	88	4880	88	4420	88	4000	88	3610	101	111	-10	86	6540	86	4860	86	4400	86	3980	86	3590	102	112	
-5	85	6480	85	4820	85	4360	85	3940	85	3560	102	112	-5	85	6450	85	4810	85	4350	85	3940	85	3550	101	111	0	84	6410	84	4780	84	4320	84	3960	84	3690	102	112	
5	82	6320	82	4740	82	4440	82	4150	82	3870	102	112	5	82	6290	82	4690	82	4280	82	4000	82	3730	101	111	10	81	6180	81	5000	81	4690	81	4380	81	4080	102	112	
15	81	6370	81	5280	81	4950	81	4630	88	4320	102	112	15	80	6130	84	5090	85	4760	86	4450	87	4150	101	111	20	82	6740	86	5600	87	5240	88	4900	89	4570	102	112	
25	83	7160	87	5940	88	5560	89	5200	90	4860	102	112	25	82	6880	86	5710	87	5350	88	5000	89	4670	101	111	30	84	7530	88	6240	89	5850	90	5470	91	5100	102	112	
30	85	7620	88	6320	89	5920	90	5540	91	5170	102	112	30	83	7330	87	6080	88	5690	89	5320	90	4960	101	111	35	85	7820	88	6480	89	6070	90	5680	91	5300	101	111	
31	85	7720	88	6400	90	6000	91	5610	92	5230	102	112	35	85	7820	88	6480	89	6070	90	5680	91	5300	101	111														

WEIGHT = 15500 LBS										VENR = 163 KIAS				WEIGHT = 15000 LBS										VENR = 162 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2		
	10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT		10 KTS V1 DIST KIAS FT					10 KTS V1 DIST KIAS FT	20 KTS V1 DIST KIAS FT	30 KTS V1 DIST KIAS FT											
-35	90	6190	90	4620	90	4180	90	3780	90	3410	99	110	-35	90	6170	90	4620	90	4180	90	3790	90	3420	98	109		
-30	90	6310	90	4710	90	4270	90	3860	90	3490	99	110	-30	90	6290	90	4710	90	4270	90	3870	90	3490	98	109		
-25	89	6430	89	4800	89	4350	89	3930	89	3550	99	110	-25	89	6400	89	4790	89	4350	89	3940	89	3560	98	109		
-20	89	6540	89	4880	89	4420	89	4000	89	3620	99	110	-20	89	6510	89	4880	89	4420	89	4010	89	3620	98	109		
-15	88	6520	88	4870	88	4410	88	3990	88	3610	99	110	-15	88	6480	88	4860	88	4410	88	3990	88	3610	98	109		
-10	87	6460	87	4830	87	4380	87	3960	87	3580	99	110	-10	87	6430	87	4820	87	4370	87	3960	87	3580	98	108		
-5	85	6400	85	4790	85	4340	85	3930	85	3550	99	110	-5	86	6360	86	4770	86	4330	86	3920	86	3550	98	108		
0	84	6330	84	4740	84	4300	84	3890	84	3510	99	110	0	84	6290	84	4720	84	4280	84	3880	84	3510	98	108		
5	83	6230	83	4670	83	4230	83	3830	83	3500	99	110	5	83	6190	83	4650	83	4220	83	3820	83	3450	98	108		
10	81	6090	81	4560	82	4230	83	3960	84	3690	99	110	10	81	6040	81	4540	81	4120	81	3720	82	3450	98	108		
15	79	5950	82	4470	83	4470	84	4180	85	3900	99	110	15	79	5900	79	4470	81	4190	82	3910	83	3640	98	108		
20	79	6090	83	5050	84	4730	85	4420	86	4120	99	110	20	77	5750	81	4730	82	4430	83	4140	84	3860	97	108		
25	80	6450	84	5350	85	5010	86	4680	87	4370	99	110	25	78	6040	82	5000	83	4680	84	4380	85	4080	97	108		
30	81	6860	85	5680	86	5320	87	4970	88	4640	99	109	30	79	6410	83	5310	84	4970	85	4650	86	4330	97	108		
35	83	7310	86	6060	87	5670	88	5300	89	4940	99	109	35	81	6830	84	5650	85	5290	86	4950	87	4610	97	108		
38	84	7610	87	6300	88	5900	89	5510	90	5140	99	109	38	82	7100	85	5880	86	5500	87	5140	88	4790	97	108		
													40	82	7290	85	6040	86	5650	87	5280	88	4920	97	108		
													42	83	7490	86	6200	87	5800	88	5420	89	5060	97	108		

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 15°
6000 FEET****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS										WEIGHT = 13000 LBS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
VENR = 159 KIAS										VENR = 158 KIAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						TEMP DEG C	TAILWIND	

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 7000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS								VENR = 163 KIAS								WEIGHT = 16000 LBS								VENR = 162 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S		VR V2		TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S		VR V2		TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S		VR V2						
	10 KTS	30 KTS	V1 DIST	V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST				V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	89	6450	89	4790	89	4330	89	3920	89	3530	102	112			-35	89	6430	89	4780	89	4330	89	3910	89	3530	101	112				
-30	88	6510	88	4830	88	4370	88	3950	88	3560	102	112			-30	88	6480	88	4820	88	4370	88	3950	88	3560	101	111				
-25	88	6550	88	4870	88	4410	88	3980	88	3590	102	112			-25	88	6520	88	4860	88	4400	88	3980	88	3590	101	111				
-20	87	6580	87	4890	87	4430	87	4000	87	3610	102	112			-20	87	6550	87	4880	87	4420	87	4000	87	3610	101	111				
-15	86	6540	86	4870	86	4410	86	3980	86	3590	102	112			-15	86	6510	86	4860	86	4400	86	3980	86	3590	101	111				
-10	84	6500	84	4840	84	4380	84	3960	85	3660	102	112			-10	85	6470	85	4830	85	4370	85	3950	85	3570	101	111				
-5	83	6450	83	4810	83	4380	85	4090	86	3820	102	112			-5	83	6420	83	4790	83	4340	83	3940	85	3670	101	111				
0	82	6400	83	4870	84	4560	85	4270	86	3990	102	112			0	82	6360	82	4750	83	4400	84	4110	85	3840	101	111				
5	80	6290	84	5120	85	4800	86	4490	87	4190	102	112			5	80	6250	82	4930	84	4620	85	4320	86	4030	101	111				
10	81	6490	85	5390	86	5050	87	4730	88	4410	102	112			10	79	6250	83	5200	85	4860	86	4550	87	4250	101	111				
15	82	6860	86	5700	87	5340	88	5000	89	4670	102	112			15	81	6600	84	5480	86	5140	87	4810	88	4490	101	111				
20	83	7270	87	6040	88	5660	89	5300	90	4950	102	112			20	82	6990	86	5810	87	5440	88	5090	89	4760	101	111				
25	84	7730	88	6420	89	6020	90	5630	91	5260	102	112			25	83	7430	87	6170	88	5780	89	5410	90	5050	101	111				
27	85	7930	88	6590	89	6170	90	5770	91	5390	102	112			27	84	7620	87	6330	88	5930	89	5550	90	5180	101	111				
															30	84	7920	88	6580	89	6160	90	5760	91	5380	101	111				
															31	85	8030	88	6660	89	6240	90	5840	91	5450	101	111				

WEIGHT = 15500 LBS								VENR = 161 KIAS								WEIGHT = 15000 LBS								VENR = 161 KIAS							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS												
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS														
			V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST					V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST	V1 DIST													
-35	89 6390	89 4770	89 4320	89 3910	89 3530	99 110		-35	89 6370	89 4770	89 4320	89 3910	89 3540	98 109		-30	89 6410	89 4810	89 4360	89 3950	89 3570	98 109		-25	88 6480	88 4850	88 4390	88 3970	88 3590	99 110	
-20	87 6510	87 4860	87 4410	87 3990	87 3600	99 110		-20	87 6470	87 4850	87 4400	87 3990	87 3610	98 109		-15	86 6470	86 4840	86 4380	86 3970	86 3580	98 108		-10	85 6420	85 4810	85 4360	85 3940	85 3560	99 110	
-5	83 6370	83 4770	83 4320	83 3910	83 3530	99 110		-5	84 6320	84 4750	84 4310	84 3900	84 3520	98 108		0	82 6310	82 4720	82 4280	82 3870	83 3600	99 110		5	81 6200	81 4640	82 4330	83 4050	84 3780	99 110	
10	79 6080	81 4870	83 4560	84 4270	85 3980	99 110		10	79 6020	79 4560	81 4270	82 3990	83 3720	98 108		15	79 6190	82 5140	84 4810	85 4500	86 4200	99 110		20	80 6550	84 5440	85 5100	86 4770	87 4450	99 110	
15	79 6190	82 5140	84 4810	85 4500	86 4200	99 110		15	77 5890	80 4810	82 4510	83 4220	84 3930	97 108		20	80 6550	84 5440	85 5100	86 4770	87 4450	99 110		25	81 6950	85 5770	86 5410	87 5060	88 4720	99 109	
20	80 6550	84 5440	85 5100	86 4770	87 4450	99 110		20	78 6130	82 5090	83 4770	84 4450	85 4160	97 108		25	81 6950	85 5770	86 5410	87 5060	88 4720	99 109		30	82 7400	86 6140	87 5760	88 5380	89 5020	99 109	
25	81 6950	85 5770	86 5410	87 5060	88 4720	99 109		25	79 6500	83 5390	84 5050	85 4720	86 4410	97 108		30	82 7400	86 6140	87 5760	88 5380	89 5020	99 109		31	83 7500	86 6220	87 5830	88 5450	89 5090	99 109	
30	82 7400	86 6140	87 5760	88 5380	89 5020	99 109		30	80 6910	84 5730	85 5370	86 5020	87 4690	97 108		31	83 7500	86 6220	87 5830	88 5450	89 5090	99 109		34	84 7800	87 6470	88 6060	89 5670	90 5290	99 109	
31	83 7500	86 6220	87 5830	88 5450	89 5090	99 109		34	82 7280	85 6030	86 5650	87 5280	88 4930	97 108		35	82 7370	85 6110	86 5730	87 5350	88 4990	97 108		38	83 7670	86 6360	87 5960	88 5570	89 5200	97 108	
34	84 7800	87 6470	88 6060	89 5670	90 5290	99 109		38	83 7670	86 6360	87 5960	88 5570	89 5200	97 108																	

MODEL 560**TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT****FLAPS - 15°
7000 FEET****CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF****SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST****SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.**

WEIGHT = 13500 LBS										VENR = 158 KIAS										WEIGHT = 13000 LBS										VENR = 157 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT												
-35	90	6330	90	4790	90	4360	90	3960	90	3590	92	105	-35	90	6340	90	4820	90	4390	90	3990	90	3620	92	105														
-30	89	6370	89	4820	89	4390	89	3980	89	3610	92	105	-30	90	6380	90	4850	90	4410	90	4010	90	3640	91	105														
-25	89	6400	89	4850	89	4410	89	4010	89	3630	92	105	-25	89	6400	89	4870	89	4430	89	4030	89	3660	91	104														
-20	88	6410	88	4860	88	4420	88	4010	88	3640	92	105	-20	88	6410	88	4870	88	4440	88	4030	88	3660	91	103														
-15	87	6350	87	4810	87	4380	87	3980	87	3610	92	104	-15	87	6350	87	4830	87	4400	87	4000	87	3630	91	103														
-10	86	6300	86	4770	86	4340	86	3940	86	3570	92	104	-10	86	6290	86	4780	86	4350	86	3960	86	3590	91	103														
-5	84	6230	84	4720	84	4290	84	3900	84	3530	92	104	-5	84	6210	84	4720	84	4300	84	3910	84	3550	90	103														
0	83	6150	83	4660	83	4240	83	3850	83	3490	92	104	0	83	6140	83	4670	83	4250	83	3860	83	3500	90	102														
5	81	6030	81	4570	81	4160	81	3770	81	3420	92	103	5	82	6010	82	4570	82	4160	82	3780	82	3420	90	102														
10	80	5900	80	4470	80	4060	80	3690	80	3340	92	103	10	80	5870	80	4460	80	4060	80	3690	80	3340	90	101														
15	78	5750	78	4360	78	3960	78	3590	78	3250	92	103	15	78	5720	78	4350	78	3950	78	3590	78	3250	90	101														
20	76	5610	76	4240	76	3870	77	3510	78	3360	92	103	20	76	5570	76	4230	76	3840	76	3490	76	3150	90	101														
25	74	5460	76	4370	77	4090	78	3820	79	3560	92	103	25	74	5420	74	4110	75	3800	76	3540	77	3300	90	101														
30	74	5600	77	4640	78	4340	79	4050	80	3770	92	103	30	72	5270	75	4310	76	4030	77	3760	78	3500	90	101														
35	75	5950	79	4920	79	4610	80	4300	81	4010	92	103	35	73	5530	76	4580	77	4270	78	3990	79	3710	90	101														
40	77	6340	80	5240	81	4910	82	4580	82	4270	92	103	40	74	5880	77	4860	78	4550	79	4240	80	3950	90	101														

WEIGHT = 12500 LBS										VENR = 156 KIAS										WEIGHT = 12000 LBS										VENR = 156 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST																			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT												
-35	91	6370	91	4850	91	4420	91	4030	91	3660	93	106	-35	91	6410	91	4900	91	4470	91	4070	91	3700	93	107														
-30	90	6400	90	4880	90	4450	90	4050	90	3680	92	105	-30	90	6430	90	4920	90	4490	90	4090	90	3720	93	106														
-25	89	6420	89	4900	89	4460	89	4060	89	3690	91	105	-25	90	6450	90	4940	90	4510	90	4110	90	3730	92	105														
-20	88	6420	88	4900	88	4470	88	4060	88	3690	90	104	-20	89	6450	89	4940	89	4500	89	4100	89	3730	91	104														
-15	87	6360	87	4850	87	4420	87	4020	87	3650	89	102	-15	88	6380	88	4880	88	4450	88	4060	88	3690	89	103														
-10	86	6290	86	4800	86	4370	86	3980	86	3610	89	102	-10	86	6300	86	4820	86	4400	86	4010	86	3650	88	101														
-5	85	6210	85	4740	85	4320	85	3930	85	3570	89	101	-5	85	6220	85	4760	85	4340	85	3950	85	3590	87	100														
0	83	6130	83	4670	83	4260	83	3870	83	3520	89	101	0	84	6130	84	4690	84	4280	84	3900	84	3540	87	100														
5	82	5990	82	4570	82	4160	82	3790	82	3440	89	100	5	82	5990	82	4580	82	4180	82	3800	82	3450	87	99														
10	80	5850	80	4460	80	4060	80	3690	80	3350	88	100	10	80	5840	80	4470	80	4070	80	3700	80	3360	87	99														
15	78	5700	78	4340	78	3950	78	3590	78	3250	88	100	15	78	5680	78	4340	78	3950	78	3600	78	3260	86	98														
20	76	5540	76	4220	76	3840	76	3480	76	3150	88	99	20	77	5520	77	4210	77	3840	77	3480	77	3160	86	98														
25	74	5390	74	4090	74	3720	74	3380	74	3050	88	99	25	75	5360	75	4080	75	3720	75	3370	75	3050	86	97														
30	72	5230	72	3990	74	3730	75	3480	75	3230	88	99	30	73	5200	73	3950	73	3600	73	3260	73	2980	86	97														
35	71	5130	74	4240	75	3960	76	3690	77	3440	88	99	35	70	5040	71	3910	72	3660	73	3410	74	3170	86	97														
40	72	5450	75	4500	76	4200	77	3920	78	3650	88	99	40	70	5040	73	4160	74	3890	74	3620	75	3370	86	97														

WEIGHT = 11500 LBS										VENR = 155 KIAS										WEIGHT = 11000 LBS										VENR = 155 KIAS									
TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS		ZERO WIND		H E A D W I N D S						VR V2 KIAS																
					10 KTS		20 KTS		30 KTS								10 KTS		20 KTS		30 KTS																		
	V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST			V1	DIST	V1	DIST	V1	DIST	V1	DIST																			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	91	6460	91	4960	91	4530	91	4140	91	3760	94 108	-35	92	6540	92	5040	92	4610	92	4210	92	3840	95 109																
-30	91	6490	91	4980	91	4550	91	4150	91	3780	93 107	-30	91	6560	91	5060	91	4630	91	4230	91	3850	94 108																
-25	90	6500	90	4990	90	4560	90	4160	90	3790	93 107	-25	90	6570	90	5060	90	4630	90	4230	90	3860	93 108																
-20	89	6490	89	4990	89	4560	89	4160	89	3790	92 105	-20	89	6550	89	5050	89	4620	89	4220	89	3850	92 107																
-15	88	6410	88	4930	88	4500	88	4110	88	3740	90 104	-15	88	6470	88	4990	88	4560	88	4170	88	3800	91 105																
-10	87	6330	87	4860	87	4440	87	4050	87	3690	89 102	-10	87	6380	87	4920	87	4500	87	4110	87	3740	89 103																
-5	85	6240	85	4790	85	4380	85	3990	85	3630	87 101	-5	86	6280	86	4840	86	4430	86	4040	86	3680	88 102																
0	84	6150	84	4720	84	4310	84	3930	84	3570	86 99	0	84	6180	84	4760	84	4350	84	3970	84	3620	86 100																
5	82	6000	82	4610	82	4200	82	3830	82	3480	85 98	5	83	6020	83	4640	83	4240	83	3870	83	3520	84 98																
10	81	5840	81	4480	81	4090	81	3720	81	3380	85 97	10	81	5860	81	4510	81	4120	81	3750	81	3410	83 96																
15	79	5680	79	4350	79	3970	79	3610	79	3280	85 97	15	79	5680	79	4370	79	3990	79	3630	79	3300	82 95																
20	77	5510	77	4220	77	3840	77	3490	77	3170	84 96	20	77	5510	77	4230	77	3860	77	3510	77	3190	82 95																
25	75	5340	75	4080	75	3720	75	3380	75	3060	84 96	25	75	5330	75	4090	75	3730	75	3390	75	3070	82 94																
30	73	5170	73	3950	73	3590	73	3260	73	2950	84 95	30	73	5160	73	3950	73	3590	73	3260	73	2950	82 94																
35	71	5010	71	3810	71	3470	71	3140	72	2910	84 95	35	71	4990	71	3810	71	3460	71	3140	71	2850	82 93																
40	69	4850	70	3830	71	3580	72	3330	73	3090	84 95	40	69	4820	69	3670	69	3340	69	3050	70	2830	82 93																

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 8000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS									VENR = 161 KIAS									WEIGHT = 16000 LBS									VENR = 161 KIAS											
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR	V2 KIAS									
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS				10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS				FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT		
-35	88	6610	88	4910	88	4450	88	4020	88	3630	102	112	-35	88	6580	88	4900	88	4440	88	4010	88	3620	101	111	-35	88	6580	88	4900	88	4440	88	4010	88	3620	101	111
-30	87	6590	87	4900	87	4430	87	4010	87	3620	102	112	-30	87	6560	87	4890	87	4430	87	4000	87	3610	101	111	-30	87	6560	87	4890	87	4430	87	4000	87	3610	101	111
-25	86	6560	86	4880	86	4420	86	4000	86	3600	102	112	-25	86	6530	86	4870	86	4410	86	3990	86	3600	101	111	-25	86	6530	86	4870	86	4410	86	3990	86	3600	101	111
-20	85	6540	85	4870	85	4400	85	3980	85	3640	102	112	-20	85	6500	85	4850	85	4390	85	3970	85	3590	101	111	-20	85	6500	85	4850	85	4390	85	3970	85	3590	101	111
-15	84	6510	84	4850	84	4390	84	4060	86	3790	102	112	-15	84	6470	84	4830	84	4380	84	3960	84	3650	101	111	-15	84	6470	84	4830	84	4380	84	3960	84	3650	101	111
-10	82	6470	82	4830	84	4520	85	4230	86	3950	102	112	-10	82	6440	82	4810	82	4360	84	4080	85	3800	101	111	-10	82	6440	82	4810	82	4360	84	4080	85	3800	101	111
-5	81	6430	83	5030	84	4720	86	4420	87	4130	102	112	-5	81	6390	82	4850	83	4540	84	4250	85	3970	101	111	-5	81	6390	82	4850	83	4540	84	4250	85	3970	101	111
0	80	6380	84	5260	85	4930	86	4610	87	4310	102	112	0	80	6340	83	5060	84	4750	85	4440	86	4150	101	111	0	80	6340	83	5060	84	4750	85	4440	86	4150	101	111
5	81	6640	85	5520	86	5180	87	4850	88	4530	102	112	5	79	6390	83	5320	85	4990	86	4660	87	4360	101	111	5	79	6390	83	5320	85	4990	86	4660	87	4360	101	111
10	81	6990	85	5810	87	5450	88	5100	89	4770	102	112	10	80	6730	84	5590	85	5240	87	4910	88	4580	101	111	10	80	6730	84	5590	85	5240	87	4910	88	4580	101	111
15	83	7400	86	6160	88	5770	89	5400	90	5050	102	112	15	82	7110	85	5920	86	5550	88	5190	89	4850	101	111	15	82	7110	85	5920	86	5550	88	5190	89	4850	101	111
20	84	7850	88	6530	89	6130	90	5740	91	5360	102	112	20	83	7550	86	6280	87	5890	89	5510	90	5150	101	111	20	83	7550	86	6280	87	5890	89	5510	90	5150	101	111
21	84	7950	88	6610	89	6200	90	5810	91	5430	102	112	23	83	7830	87	6510	88	6110	89	5720	90	5340	101	111	23	83	7830	87	6510	88	6110	89	5720	90	5340	101	111
23	85	8150	88	6780	89	6360	90	5950	91	5560	102	112	25	84	8030	88	6680	89	6260	90	5860	91	5480	101	111	25	84	8030	88	6680	89	6260	90	5860	91	5480	101	111
													26	84	8140	88	6770	89	6340	90	5940	91	5550	101	111	26	84	8140	88	6770	89	6340	90	5940	91	5550	101	111

WEIGHT = 15500 LBS										VENR = 160 KIAS										WEIGHT = 15000 LBS										VENR = 159 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2														
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST				V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT												
-35	88	6550	88	4890	88	4430	88	4010	88	3620	99	110	-35	89	6510	89	4880	89	4430	89	4010	89	3630	98	109														
-30	87	6520	87	4870	87	4420	87	4000	87	3610	99	110	-30	87	6480	87	4860	87	4410	87	3990	87	3610	98	109														
-25	86	6490	86	4850	86	4400	86	3980	86	3600	99	110	-25	86	6450	86	4840	86	4390	86	3980	86	3590	98	108														
-20	85	6460	85	4830	85	4380	85	3960	85	3580	99	110	-20	85	6410	85	4810	85	4370	85	3960	85	3580	98	108														
-15	84	6420	84	4810	84	4360	84	3950	84	3560	99	110	-15	84	6380	84	4790	84	4350	84	3940	84	3560	98	108														
-10	83	6380	83	4780	83	4330	83	3920	83	3570	99	110	-10	83	6340	83	4760	83	4320	83	3910	83	3540	98	108														
-5	81	6340	81	4750	81	4310	82	3990	83	3720	99	110	-5	82	6290	82	4720	82	4290	82	3880	82	3510	98	108														
0	80	6280	81	4750	82	4450	83	4160	84	3890	99	110	0	80	6230	80	4680	80	4250	81	3900	82	3640	98	108														
5	79	6180	81	4990	83	4680	84	4380	85	4090	99	110	5	79	6120	79	4670	81	4380	82	4090	83	3820	98	108														
10	78	6300	82	5240	83	4910	85	4600	86	4290	99	110	10	77	6020	80	4910	81	4600	83	4300	84	4020	97	108														
15	80	6660	83	5540	84	5190	86	4860	87	4540	99	110	15	78	6240	81	5180	82	4860	83	4540	84	4240	97	108														
20	81	7060	84	5870	86	5500	87	5150	88	4810	99	109	20	79	6600	82	5490	83	5140	84	4810	85	4490	97	108														
25	82	7510	86	6240	87	5850	88	5470	89	5110	99	109	25	80	7010	84	5820	85	5460	86	5110	87	4770	97	108														
26	82	7600	86	6320	87	5920	88	5540	89	5180	99	109	30	81	7460	85	6200	86	5810	87	5440	88	5080	97	108														
30	83	8010	87	6650	88	6240	89	5840	90	5450	99	109	34	82	7870	86	6530	87	6120	88	5730	88	5350	97	108														

WEIGHT = 14500 LBS										VENR = 159 KIAS				WEIGHT = 14000 LBS										VENR = 158 KIAS			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S						VR	V2		
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST				V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST						
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT				KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT
-35	89	6490	89	4880	89	4430	89	4020	89	3640	96	108	-35	89	6470	89	4880	89	4440	89	4030	89	3650	94	106		
-30	88	6450	88	4860	88	4410	88	4000	88	3620	96	107	-30	88	6430	88	4860	88	4410	88	4010	88	3630	94	106		
-25	86	6420	86	4830	86	4390	86	3980	86	3600	96	107	-25	87	6390	87	4830	87	4390	87	3980	87	3610	94	106		
-20	85	6380	85	4800	85	4360	85	3950	85	3580	96	107	-20	86	6350	86	4800	86	4360	86	3960	86	3580	94	106		
-15	84	6340	84	4780	84	4340	84	3930	84	3560	96	107	-15	84	6310	84	4770	84	4330	84	3930	84	3560	94	105		
-10	83	6290	83	4740	83	4310	83	3900	83	3530	96	106	-10	83	6260	83	4730	83	4300	83	3900	83	3530	94	105		
-5	82	6240	82	4700	82	4270	82	3870	82	3500	96	106	-5	82	6200	82	4690	82	4260	82	3870	82	3500	94	105		
0	81	6180	81	4660	81	4230	81	3830	81	3470	96	106	0	81	6140	81	4640	81	4220	81	3830	81	3460	94	105		
5	79	6070	79	4580	79	4160	80	3820	81	3570	96	106	5	79	6030	79	4560	79	4140	79	3760	79	3400	94	105		
10	77	5970	78	4590	79	4300	80	4020	81	3750	96	106	10	78	5920	78	4470	78	4060	78	3750	79	3490	94	105		
15	76	5830	79	4840	80	4540	81	4250	82	3960	96	106	15	76	5780	77	4520	78	4230	79	3950	80	3690	94	105		
20	77	6170	80	5120	81	4800	82	4480	83	4180	96	106	20	75	5750	78	4780	79	4470	80	4180	81	3900	94	104		
25	78	6540	81	5430	82	5090	83	4760	84	4440	96	106	25	76	6100	79	5060	80	4740	81	4430	82	4130	94	104		
30	79	6960	83	5780	84	5410	85	5060	85	4720	96	106	30	77	6480	80	5370	81	5030	82	4700	83	4390	94	104		
34	80	7320	84	6080	85	5690	85	5330	86	4970	96	106	35	79	6900	82	5720	83	5360	83	5010	84	4670	94	104		
35	81	7420	84	6160	85	5770	86	5390	86	5030	96	106	37	79	7080	82	5870	83	5500	84	5140	85	4790	94	104		
37	81	7610	84	6320	85	5920	86	5540	87	5170	96	106	38	79	7170	82	5950	83	5570	84	5210	85	4860	94	104		

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
8000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO SPEED BRAKES - RETRACT
 LANDING GEAR - DOWN INOPERATIVE ENGINE - WINDMILLING AFTER V1
 ANTI-ICE SYSTEMS - OFF OPERATIVE ENGINE - TAKEOFF THRUST
SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS							VENR = 157 KIAS							WEIGHT = 13000 LBS							VENR = 156 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S									
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS		V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST		V1 DIST	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS		10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS		FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS						
-35	89	6470	89	4900	89	4450	89	4050	89	3670	92	105	-35	90	6470	90	4920	90	4480	90	4070	90	3700	91	104	-35	89	6470	89	4900	89	4450	89	4050	89	3670	92	105
-30	88	6420	88	4870	88	4430	88	4020	88	3650	92	105	-30	88	6420	88	4880	88	4450	88	4040	88	3670	91	104	-30	88	6420	88	4880	88	4450	88	4040	88	3670	92	105
-25	87	6380	87	4830	87	4400	87	3990	87	3620	92	105	-25	87	6370	87	4840	87	4410	87	4010	87	3640	91	103	-25	87	6370	87	4840	87	4410	87	4010	87	3640	92	105
-20	86	6330	86	4800	86	4370	86	3970	86	3590	92	104	-20	86	6320	86	4810	86	4380	86	3980	86	3610	91	103	-20	86	6320	86	4810	86	4380	86	3980	86	3610	92	104
-15	85	6290	85	4760	85	4330	85	3940	85	3570	92	104	-15	85	6270	85	4770	85	4340	85	3950	85	3580	90	103	-15	85	6270	85	4770	85	4340	85	3950	85	3580	92	104
-10	83	6230	83	4730	83	4300	83	3900	83	3540	92	104	-10	84	6220	84	4730	84	4300	84	3910	84	3550	90	102	-10	84	6220	84	4730	84	4300	84	3910	84	3550	92	104
-5	82	6170	82	4680	82	4260	82	3870	82	3500	92	103	-5	82	6150	82	4680	82	4260	82	3870	82	3510	90	102	-5	82	6150	82	4680	82	4260	82	3870	82	3510	92	103
0	81	6100	81	4630	81	4210	81	3820	81	3460	92	103	0	81	6080	81	4620	81	4210	81	3820	81	3470	90	102	0	81	6080	81	4620	81	4210	81	3820	81	3470	92	103
5	79	5990	79	4540	79	4130	79	3750	79	3390	92	103	5	80	5960	80	4530	80	4120	80	3750	80	3400	90	101	5	80	5960	80	4530	80	4120	80	3750	80	3400	92	103
10	78	5880	78	4450	78	4050	78	3670	78	3320	92	103	10	78	5840	78	4440	78	4040	78	3670	78	3320	90	101	10	78	5840	78	4440	78	4040	78	3670	78	3320	92	103
15	76	5740	76	4350	76	3950	76	3580	76	3240	92	103	15	76	5700	76	4330	76	3940	76	3570	76	3230	90	101	15	76	5700	76	4330	76	3940	76	3570	76	3230	92	103
20	74	5600	76	4440	77	4160	78	3890	79	3620	92	103	20	74	5560	74	4220	75	3860	76	3610	77	3360	90	101	20	74	5560	74	4220	75	3860	76	3610	77	3360	92	103
25	74	5680	77	4710	78	4410	79	4110	80	3830	92	103	25	72	5410	75	4370	76	4090	77	3820	78	3560	90	101	25	72	5410	75	4370	76	4090	77	3820	78	3560	92	103
30	75	6030	78	4990	79	4680	80	4370	81	4070	92	103	30	73	5600	76	4640	77	4340	78	4050	79	3770	90	101	30	73	5600	76	4640	77	4340	78	4050	79	3770	92	103
35	76	6410	79	5310	80	4970	81	4650	82	4330	92	103	35	74	5940	77	4920	78	4610	79	4300	80	4010	90	101	35	74	5940	77	4920	78	4610	79	4300	80	4010	92	103
38	77	6650	80	5520	81	5160	82	4820	83	4500	92	103	38	75	6170	78	5110	79	4780	80	4460	80	4160	90	101	38	75	6170	78	5110	79	4780	80	4460	80	4160	92	103

WEIGHT = 12500 LBS								WEIGHT = 12000 LBS																	
VENR = 155 KIAS								VENR = 155 KIAS																	
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS											
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS			FT	KIAS	FT	KIAS	FT	KIAS	FT									
-35	90	6490	90	4950	90	4510	90	4110	90	3730	92	105	-35	90	6520	90	4990	90	4560	90	4150	90	3780	92	106
-30	89	6440	89	4910	89	4480	89	4070	89	3700	90	104	-30	89	6460	89	4950	89	4520	89	4120	89	3740	91	105
-25	87	6380	87	4870	87	4440	87	4040	87	3670	90	102	-25	88	6400	88	4900	88	4470	88	4080	88	3710	90	103
-20	86	6320	86	4830	86	4400	86	4000	86	3640	89	102	-20	87	6340	87	4850	87	4430	87	4040	87	3670	88	102
-15	85	6270	85	4780	85	4360	85	3970	85	3600	89	101	-15	85	6280	85	4810	85	4390	85	4000	85	3630	87	100
-10	84	6210	84	4740	84	4320	84	3930	84	3570	89	101	-10	84	6210	84	4760	84	4340	84	3950	84	3590	87	100
-5	83	6140	83	4680	83	4270	83	3880	83	3530	89	101	-5	83	6140	83	4700	83	4290	83	3900	83	3550	87	99
0	81	6060	81	4620	81	4210	81	3830	81	3480	89	100	0	82	6050	82	4630	82	4230	82	3850	82	3500	87	99
5	80	5940	80	4530	80	4130	80	3750	80	3400	88	100	5	80	5930	80	4530	80	4130	80	3760	80	3420	87	99
10	78	5820	78	4430	78	4040	78	3670	78	3330	88	100	10	78	5800	78	4430	78	4040	78	3680	78	3330	86	98
15	76	5670	76	4320	76	3930	76	3570	76	3230	88	99	15	77	5640	77	4310	77	3930	77	3570	77	3240	86	98
20	74	5520	74	4200	74	3820	74	3470	74	3140	88	99	20	75	5490	75	4190	75	3820	75	3470	75	3140	86	97
25	73	5370	73	4080	73	3790	74	3530	75	3290	88	99	25	73	5340	73	4070	73	3700	73	3360	73	3040	86	97
30	71	5220	73	4290	74	4020	75	3750	76	3490	88	99	30	71	5180	71	3970	72	3710	73	3460	74	3220	86	97
35	72	5510	75	4560	76	4260	77	3980	77	3700	88	99	35	69	5100	72	4210	73	3940	74	3670	75	3420	86	97
38	73	5720	75	4730	76	4420	77	4120	78	3840	88	99	38	70	5280	73	4370	74	4080	75	3800	76	3540	86	97

WEIGHT = 11500 LBS								VENR = 154 KIAS								WEIGHT = 11000 LBS								VENR = 153 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	V1 DIST	30 KTS	10 KTS		V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS		10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	V1 DIST	20 KTS	V1 DIST	30 KTS				
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	91	6570	91	5050	91	4620	91	4210	91	3840	93	107	-35	91	6650	91	5130	91	4690	91	4290	91	3910	94	108						
-30	89	6510	89	5000	89	4570	89	4170	89	3800	92	106	-30	90	6570	90	5070	90	4640	90	4240	90	3860	92	107						
-25	88	6440	88	4950	88	4520	88	4120	88	3750	90	104	-25	88	6490	88	5010	88	4580	88	4190	88	3810	91	105						
-20	87	6370	87	4890	87	4470	87	4080	87	3710	89	103	-20	87	6420	87	4950	87	4530	87	4130	87	3770	90	104						
-15	86	6300	86	4840	86	4420	86	4030	86	3670	88	101	-15	86	6340	86	4890	86	4470	86	4090	86	3720	88	102						
-10	84	6230	84	4790	84	4370	84	3990	84	3630	86	100	-10	85	6270	85	4830	85	4420	85	4030	85	3670	87	101						
-5	83	6150	83	4720	83	4310	83	3930	83	3580	85	98	-5	84	6180	84	4760	84	4350	84	3970	84	3620	85	99						
0	82	6060	82	4650	82	4250	82	3870	82	3520	85	98	0	82	6080	82	4690	82	4280	82	3910	82	3560	84	97						
5	80	5930	80	4550	80	4150	80	3780	80	3440	85	97	5	81	5940	81	4570	81	4180	81	3810	81	3470	83	96						
10	79	5790	79	4440	79	4050	79	3690	79	3350	85	97	10	79	5800	79	4460	79	4070	79	3710	79	3370	82	95						
15	77	5630	77	4310	77	3930	77	3580	77	3250	84	96	15	77	5630	77	4330	77	3950	77	3600	77	3270	82	95						
20	75	5470	75	4190	75	3820	75	3470	75	3150	84	96	20	75	5460	75	4190	75	3820	75	3480	75	3160	82	94						
25	73	5310	73	4060	73	3700	73	3360	73	3040	84	95	25	73	5290	73	4060	73	3700	73	3360	73	3050	82	94						
30	71	5150	71	3930	71	3570	71	3240	71	2960	84	95	30	71	5130	71	3920	71	3570	71	3240	71	2940	82	93						
35	69	5000	70	3880	71	3620	71	3370	72	3140	84	95	35	69	4970	69	3790	69	3450	69	3130	69	2880	82	93						
38	68	4910	70	4020	71	3750	72	3500	73	3250	84	95	38	68	4880	68	3720	69	3440	69	3200	70	2980	82	93						

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 9000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS											WEIGHT = 16000 LBS														
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR KIAS	V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT		ZERO WIND V1 DIST KIAS FT		H E A D W I N D S						VR KIAS	V2 KIAS
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS			
					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT								V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT		
	-35	86	6570	86	4890	86	4420	86	4000	86				3610	102	112	-35	86	6540	86	4870	86	4410		
-30	85	6550	85	4880	85	4410	85	3990	85	3620	102	112	-30	85	6520	85	4860	85	4400	85	3980	85	3590	101	111
-25	84	6530	84	4860	84	4400	84	4040	85	3770	102	112	-25	84	6500	84	4850	84	4390	84	3970	84	3630	101	111
-20	83	6510	83	4850	84	4500	85	4210	86	3930	102	112	-20	83	6480	83	4840	83	4380	84	4050	85	3780	101	111
-15	82	6490	83	5000	84	4690	85	4380	86	4100	102	112	-15	82	6450	82	4820	83	4510	84	4220	85	3940	101	111
-10	80	6460	83	5210	85	4890	86	4580	87	4270	102	112	-10	80	6420	82	5020	83	4700	85	4400	86	4110	101	111
-5	80	6520	84	5440	85	5090	86	4770	87	4460	102	112	-5	79	6380	83	5230	84	4910	85	4590	86	4290	101	111
0	81	6830	85	5680	86	5330	87	4990	88	4670	102	112	0	80	6570	83	5470	85	5130	86	4800	87	4490	101	111
5	81	7160	85	5970	87	5600	88	5240	89	4900	102	112	5	80	6900	84	5740	85	5380	87	5040	88	4710	101	111
10	82	7540	86	6290	87	5900	89	5520	90	5160	102	112	10	81	7250	85	6040	86	5670	87	5310	88	4960	101	111
15	84	8000	87	6660	88	6250	89	5860	90	5480	102	112	15	82	7690	86	6400	87	6010	88	5630	89	5260	101	111
16	84	8100	87	6740	89	6330	90	5930	91	5540	102	112	18	83	7970	87	6640	88	6230	89	5830	90	5450	101	111
18	84	8300	88	6910	89	6480	90	6070	91	5680	102	112	20	84	8170	87	6800	88	6380	89	5980	90	5590	101	111
													22	84	8380	88	6980	89	6540	90	6130	91	5730	101	111

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS																																																																																																																																																																																																							
TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS	TEMP DEG C	TAILWIND 10 KTS V1 DIST KIAS FT	ZERO WIND V1 DIST KIAS FT	H E A D W I N D S						VR V2 KIAS																																																																																																																																																																																														
			10 KTS		20 KTS		30 KTS						10 KTS		20 KTS		30 KTS																																																																																																																																																																																																
			V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT					V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT	V1 DIST KIAS FT																																																																																																																																																																																															
-35	86 6490	86 4860	86 4400	86 3980	86 3600	99 110	-35	86 6450	86 4840	86 4390	86 3980	86 3600	98 108	-30	85 6470	85 4840	85 4390	85 3970	85 3590	99 110	-30	85 6430	85 4830	85 4380	85 3970	85 3590	98 108	-25	84 6450	84 4830	84 4370	84 3960	84 3580	99 110	-25	84 6400	84 4810	84 4360	84 3950	84 3570	98 108	-20	83 6420	83 4810	83 4360	83 3950	83 3570	99 110	-20	83 6370	83 4790	83 4340	83 3940	83 3560	98 108	-15	82 6390	82 4790	82 4340	82 3960	83 3690	99 110	-15	82 6340	82 4770	82 4330	82 3920	82 3540	98 108	-10	81 6360	81 4770	81 4410	83 4130	84 3850	99 110	-10	81 6300	81 4740	81 4300	81 3900	82 3600	98 108	-5	79 6320	81 4910	82 4600	83 4310	84 4020	99 110	-5	80 6260	80 4710	80 4310	81 4030	82 3760	98 108	0	78 6250	82 5130	83 4810	84 4510	85 4200	99 110	0	78 6200	79 4800	81 4500	82 4210	83 3930	98 108	5	78 6460	82 5380	83 5040	85 4720	86 4410	99 110	5	77 6110	80 5040	81 4720	83 4420	84 4120	97 108	10	79 6790	83 5660	84 5310	85 4970	86 4640	99 110	10	77 6360	81 5290	82 4960	83 4640	84 4330	97 108	15	81 7190	84 5990	85 5620	86 5260	87 4910	99 109	15	79 6720	82 5590	83 5240	84 4910	85 4590	97 108	20	82 7630	85 6350	86 5960	87 5580	88 5210	99 109	20	80 7120	83 5930	84 5560	85 5200	86 4860	97 108	22	82 7820	86 6510	87 6110	88 5720	89 5340	99 109	25	81 7580	84 6300	85 5910	86 5530	87 5170	97 108	25	83 8130	86 6760	87 6340	88 5940	89 5550	99 109	26	81 7670	85 6380	86 5990	87 5600	87 5240	97 108	26	83 8230	87 6850	88 6430	89 6020	89 5620	99 109	29	82 7980	85 6630	86 6220	87 5820	88 5440	97 108

WEIGHT = 14500 LBS										VENR = 157 KIAS										WEIGHT = 14000 LBS										VENR = 157 KIAS									
TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2		TEMP DEG C	TAILWIND 10 KTS V1 DIST		ZERO WIND V1 DIST		H E A D W I N D S						VR V2															
					10 KTS		20 KTS		30 KTS									10 KTS		20 KTS		30 KTS																	
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT												
-35	87	6420	87	4830	87	4390	87	3980	87	3600	96	107	-35	87	6400	87	4830	87	4390	87	3990	87	3610	94	106														
-30	86	6390	86	4810	86	4370	86	3960	86	3590	96	107	-30	86	6370	86	4810	86	4370	86	3970	86	3590	94	106														
-25	84	6360	84	4790	84	4350	84	3950	84	3570	96	107	-25	85	6330	85	4780	85	4350	85	3950	85	3570	94	105														
-20	83	6330	83	4770	83	4330	83	3930	83	3550	96	106	-20	83	6300	83	4760	83	4330	83	3930	83	3560	94	105														
-15	82	6300	82	4750	82	4310	82	3910	82	3540	96	106	-15	82	6260	82	4730	82	4300	82	3900	82	3540	94	105														
-10	81	6260	81	4720	81	4280	81	3880	81	3510	96	106	-10	81	6220	81	4700	81	4270	81	3880	81	3510	94	105														
-5	80	6210	80	4680	80	4250	80	3860	80	3510	96	106	-5	80	6170	80	4660	80	4240	80	3850	80	3480	94	105														
0	78	6140	78	4630	78	4210	80	3940	81	3670	96	106	0	79	6090	79	4610	79	4190	79	3800	79	3440	94	105														
5	77	6060	78	4700	79	4410	80	4120	81	3850	96	106	5	77	6010	77	4550	77	4130	78	3840	79	3590	94	105														
10	76	5960	79	4940	80	4640	81	4340	82	4040	96	106	10	76	5910	77	4610	78	4320	79	4040	80	3770	94	105														
15	77	6280	80	5220	81	4890	82	4580	83	4270	96	106	15	74	5860	78	4870	79	4560	80	4270	81	3980	94	104														
20	78	6640	81	5530	82	5180	83	4850	84	4530	96	106	20	76	6200	79	5150	80	4820	81	4510	82	4210	94	104														
25	79	7060	82	5870	83	5500	84	5150	85	4810	96	106	25	77	6570	80	5460	81	5120	82	4790	83	4470	94	104														
29	80	7420	83	6170	84	5790	85	5410	86	5060	96	106	30	78	6990	81	5810	82	5440	83	5090	84	4750	94	104														
30	80	7520	83	6250	84	5860	85	5480	86	5120	96	106	33	79	7260	82	6030	83	5650	84	5290	85	4940	94	104														
33	81	7810	84	6500	85	6090	86	5700	87	5320	96	106	35	79	7450	82	6190	83	5800	84	5420	85	5060	94	104														
													36	80	7540	83	6270	84	5870	84	5490	85	5130	94	104														

MODEL 560

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
9000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
 INOPERATIVE ENGINE - WINDMILLING AFTER V1
 OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 156 KIAS								WEIGHT = 13000 LBS								VENR = 155 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S								
	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS		30 KTS	10 KTS	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS		V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	20 KTS	30 KTS					
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	87	6390	87	4840	87	4400	87	4000	87	3620	92	105	-35	87	6380	87	4850	87	4420	87	4020	87	3650	91	103						
-30	86	6350	86	4810	86	4380	86	3980	86	3600	92	104	-30	86	6340	86	4820	86	4390	86	3990	86	3620	91	103						
-25	85	6310	85	4780	85	4350	85	3950	85	3580	92	104	-25	85	6300	85	4790	85	4360	85	3970	85	3600	90	103						
-20	84	6270	84	4760	84	4330	84	3930	84	3560	92	104	-20	84	6250	84	4760	84	4330	84	3940	84	3570	90	102						
-15	83	6230	83	4730	83	4300	83	3900	83	3540	92	103	-15	83	6210	83	4720	83	4300	83	3910	83	3550	90	102						
-10	81	6180	81	4690	81	4270	81	3870	81	3510	92	103	-10	82	6160	82	4680	82	4270	82	3880	82	3520	90	102						
-5	80	6130	80	4650	80	4230	80	3840	80	3480	92	103	-5	80	6100	80	4640	80	4230	80	3840	80	3480	90	102						
0	79	6050	79	4590	79	4180	79	3790	79	3440	92	103	0	79	6020	79	4580	79	4170	79	3790	79	3440	90	101						
5	77	5960	77	4520	77	4110	77	3730	77	3380	92	103	5	78	5930	78	4510	78	4100	78	3730	78	3380	90	101						
10	76	5860	76	4440	76	4040	77	3760	78	3500	92	103	10	76	5820	76	4420	76	4030	76	3650	76	3310	90	101						
15	74	5730	76	4530	77	4240	78	3970	79	3700	92	103	15	74	5680	74	4320	74	3940	75	3680	76	3430	90	101						
20	73	5760	77	4790	78	4490	79	4190	80	3910	92	103	20	72	5550	74	4450	75	4160	76	3890	77	3630	90	101						
25	75	6120	78	5070	79	4750	80	4440	81	4140	92	103	25	72	5680	76	4710	77	4410	78	4120	78	3840	90	101						
30	76	6490	79	5390	80	5050	81	4720	82	4410	92	103	30	74	6020	77	5000	78	4680	79	4370	79	4080	90	101						
35	77	6910	80	5730	81	5370	82	5020	83	4690	92	103	35	75	6400	78	5310	79	4970	80	4650	80	4330	90	101						
36	78	6990	80	5810	81	5440	82	5090	83	4750	92	103	36	75	6480	78	5380	79	5030	80	4700	81	4390	90	101						

WEIGHT = 12500 LBS								VENR = 154 KIAS								WEIGHT = 12000 LBS								VENR = 153 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S							
	10 KTS		V1 DIST		10 KTS		20 KTS			10 KTS		V1 DIST		10 KTS		20 KTS			10 KTS		V1 DIST		10 KTS		20 KTS			10 KTS		V1 DIST		10 KTS		20 KTS		10 KTS		20 KTS	
	V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST		V1	DIST	V1	DIST	V1	DIST	V1	DIST	V1	DIST		
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			
-35	88	6390	88	4870	88	4440	88	4040	88	3670	89	102	-35	88	6410	88	4910	88	4480	88	4080	88	3710	90	103	-30	86	6340	86	4840	86	4410	86	4020	86	3650	89	102	
-25	85	6290	85	4800	85	4380	85	3990	85	3620	89	101	-25	86	6310	86	4830	86	4410	86	4010	86	3650	87	101	-20	84	6250	84	4770	84	4350	84	3960	84	3590	89	101	
-15	83	6200	83	4730	83	4310	83	3920	83	3560	89	101	-15	83	6200	83	4750	83	4330	83	3940	83	3590	87	99	-10	82	6140	82	4690	82	4270	82	3890	82	3530	89	101	
-5	81	6080	81	4640	81	4230	81	3850	81	3490	88	100	-5	81	6070	81	4650	81	4240	81	3860	81	3510	87	99	0	79	6000	79	4580	79	4170	79	3790	79	3440	88	100	
5	78	5900	78	4500	78	4100	78	3730	78	3380	88	100	5	78	5880	78	4500	78	4100	78	3730	78	3390	86	98	10	76	5780	76	4410	76	4020	76	3650	76	3310	88	99	
15	74	5640	74	4300	74	3910	74	3550	74	3220	88	99	15	75	5610	75	4290	75	3910	75	3550	75	3220	86	97	20	73	5500	73	4190	73	3860	74	3600	75	3350	88	99	
25	71	5360	73	4360	74	4080	75	3810	76	3550	88	99	25	71	5320	71	4050	72	3770	73	3520	74	3270	86	97	30	71	5580	74	4630	75	4330	76	4040	77	3760	88	99	
35	73	5920	76	4910	76	4590	77	4290	78	4000	88	99	35	70	5480	73	4540	74	4240	75	3950	76	3680	86	97	36	73	6000	76	4970	77	4650	78	4340	78	4050	88	99	

WEIGHT = 11500 LBS								VENR = 153 KIAS								WEIGHT = 11000 LBS								VENR = 152 KIAS																																																																																																																																			
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S																																																																																																																											
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS		V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS	V1 DIST		V1 DIST	V1 DIST	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS		30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS																																																																																																																								
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																																																																																																																						
-35	88	6450	88	4960	88	4530	88	4130	88	3760	91	104	-35	89	6510	89	5020	89	4590	89	4190	89	3820	91	105	-30	87	6390	87	4910	87	4490	87	4090	87	3730	89	103	-30	87	6440	87	4970	87	4540	87	4150	87	3780	90	104	-25	86	6330	86	4860	86	4440	86	4050	86	3690	88	101	-25	86	6370	86	4910	86	4500	86	4100	86	3740	89	102	-20	85	6270	85	4820	85	4400	85	4020	85	3650	87	100	-20	85	6310	85	4860	85	4450	85	4060	85	3700	87	101	-15	84	6210	84	4770	84	4360	84	3980	84	3620	85	99	-15	84	6240	84	4810	84	4400	84	4020	84	3660	86	100	-10	82	6140	82	4720	82	4310	82	3930	82	3570	85	98	-10	83	6170	83	4750	83	4350	83	3970	83	3610	84	98
-5	81	6070	81	4660	81	4260	81	3880	81	3530	85	97	-5	81	6090	81	4690	81	4290	81	3910	81	3560	83	96	0	80	5980	80	4590	80	4190	80	3820	80	3470	85	97	0	80	5990	80	4610	80	4220	80	3850	80	3500	83	96	5	78	5870	78	4500	78	4110	78	3740	78	3400	85	97	5	79	5870	79	4520	79	4130	79	3770	79	3420	82	95																																																																														
10	77	5740	77	4410	77	4020	77	3660	77	3320	84	96	10	77	5740	77	4420	77	4030	77	3670	77	3340	82	95	15	75	5590	75	4290	75	3910	75	3550	75	3220	84	96	15	75	5580	75	4290	75	3910	75	3560	75	3240	82	94	20	73	5440	73	4170	73	3800	73	3450	73	3130	84	95	20	73	5420	73	4160	73	3800	73	3450	73	3130	82	94																																																																														
25	71	5290	71	4040	71	3680	71	3340	71	3020	84	95	25	71	5260	71	4030	71	3670	71	3340	71	3030	82	93	30	69	5140	69	3940	70	3680	71	3430	72	3190	84	95	30	69	5100	69	3900	69	3550	69	3230	69	2920	82	93	35	68	5050	71	4170	71	3900	72	3640	73	3390	84	95	35	67	4960	68	3830	69	3570	70	3330	70	3100	82	93																																																																														
36	68	5110	71	4220	72	3950	73	3680	73	3430	84	95	36	67	4930	68	3870	69	3620	70	3370	71	3130	82	93																																																																																																																																		



Figure 7-4 (Sheet 20 of 22)

TAKEOFF FIELD LENGTH - FEET
WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15°
10,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
 LANDING GEAR - DOWN
 ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 16300 LBS										WEIGHT = 16000 LBS															
VENR = 159 KIAS										VENR = 159 KIAS															
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2		TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2							
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS				V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS										
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS		KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS						
-35	84	6530	84	4860	84	4400	84	4020	85	3750	102	112	-35	84	6500	84	4850	84	4390	84	3970	84	3610	101	111
-30	83	6520	83	4860	83	4480	85	4190	86	3910	102	112	-30	83	6480	83	4840	83	4380	84	4030	85	3760	101	111
-25	82	6510	83	4980	84	4660	85	4370	86	4080	102	112	-25	82	6470	82	4830	83	4490	84	4200	85	3920	101	111
-20	81	6490	83	5180	84	4860	86	4550	87	4250	102	112	-20	81	6450	82	4990	83	4680	84	4380	86	4090	101	111
-15	80	6480	84	5400	85	5060	86	4740	87	4430	102	112	-15	80	6430	83	5200	84	4880	85	4570	86	4260	101	111
-10	80	6760	84	5630	85	5280	87	4950	88	4620	102	112	-10	79	6510	83	5430	84	5080	85	4760	87	4450	101	111
-5	81	7050	85	5880	86	5510	87	5160	88	4830	102	112	-5	80	6790	84	5650	85	5300	86	4970	87	4640	101	111
0	82	7370	85	6150	87	5770	88	5410	89	5060	102	112	0	80	7090	84	5920	86	5550	87	5200	88	4860	101	111
5	82	7720	86	6440	87	6050	88	5670	89	5300	102	112	5	81	7430	85	6190	86	5810	87	5450	88	5100	101	111
10	83	8160	87	6810	88	6390	89	5990	90	5600	102	112	10	82	7840	86	6540	87	6140	88	5750	89	5380	101	111
11	83	8260	87	6890	88	6470	89	6060	90	5670	102	112	13	83	8130	87	6780	88	6360	89	5960	90	5580	101	111
13	84	8460	88	7060	89	6620	90	6210	91	5810	102	112	15	83	8320	87	6940	88	6510	89	6100	90	5710	101	111
													17	84	8530	87	7110	88	6670	89	6250	90	5850	101	111

WEIGHT = 15500 LBS										WEIGHT = 15000 LBS									
VENR = 158 KIAS										VENR = 157 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2		TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS			VR V2	
	10 KTS KIAS	V1 DIST FT	V1 DIST KIAS	V1 DIST FT	10 KTS KIAS	20 KTS KIAS	30 KTS KIAS				10 KTS KIAS	V1 DIST FT	V1 DIST KIAS	V1 DIST FT	10 KTS KIAS	20 KTS KIAS	30 KTS KIAS		
-35	84	6450	84	4820	84	4370	84	3960	99 110	-35	84	6400	84	4810	84	4360	84	3950	98 108
-30	83	6430	83	4820	83	4370	83	3950	99 110	-30	83	6380	83	4790	83	4350	83	3940	98 108
-25	82	6410	82	4800	82	4360	82	3940	99 110	-25	82	6360	82	4780	82	4340	82	3930	98 108
-20	81	6390	81	4790	81	4390	82	4110	99 110	-20	81	6340	81	4770	81	4320	81	3920	98 108
-15	80	6370	81	4880	82	4570	83	4280	99 110	-15	80	6310	80	4750	80	4310	81	4000	98 108
-10	79	6340	81	5080	82	4770	84	4460	99 110	-10	79	6280	79	4760	80	4460	81	4170	98 108
-5	78	6360	82	5300	83	4970	84	4650	99 110	-5	78	6240	80	4960	81	4650	82	4360	97 108
0	79	6650	82	5540	84	5200	85	4870	99 110	0	77	6220	80	5190	82	4870	83	4550	97 108
5	79	6950	83	5800	84	5440	85	5100	99 110	5	77	6510	81	5420	82	5080	83	4760	97 108
10	80	7330	84	6120	85	5740	86	5380	99 109	10	78	6850	82	5710	83	5360	84	5020	97 108
15	81	7770	85	6480	86	6080	87	5700	99 109	15	80	7250	83	6050	84	5670	85	5310	97 108
17	82	7960	85	6640	86	6230	87	5830	99 109	20	81	7700	84	6420	85	6020	86	5640	97 108
20	83	8260	86	6890	87	6460	88	6060	99 109	21	81	7800	84	6500	85	6100	86	5710	97 108
21	83	8370	86	6980	87	6550	88	6130	99 109	25	82	8210	85	6840	86	6410	87	6010	97 108

WEIGHT = 14500 LBS										VENR = 156 KIAS										WEIGHT = 14000 LBS										VENR = 156 KIAS									
TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2	TEMP DEG C	TAILWIND		ZERO WIND		HEADWINDS						VR V2																
	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST			20 KTS	30 KTS	10 KTS	V1 DIST	V1 DIST	V1 DIST	20 KTS	30 KTS																			
	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT			KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT	KIAS	FT																	
-35	85	6360	85	4790	85	4350	85	3950	85	3570	96 107	-35	85	6330	85	4780	85	4350	85	3950	85	3570	94 105																
-30	83	6340	83	4780	83	4340	83	3930	83	3560	96 106	-30	84	6310	84	4770	84	4330	84	3930	84	3560	94 105																
-25	82	6320	82	4760	82	4320	82	3920	82	3550	96 106	-25	83	6280	83	4750	83	4320	83	3920	83	3550	94 105																
-20	81	6290	81	4740	81	4310	81	3910	81	3530	96 106	-20	81	6250	81	4730	81	4300	81	3900	81	3530	94 105																
-15	80	6260	80	4720	80	4290	80	3890	80	3520	96 106	-15	80	6220	80	4700	80	4280	80	3880	80	3510	94 105																
-10	79	6220	79	4700	79	4270	79	3900	80	3640	96 106	-10	79	6180	79	4670	79	4250	79	3850	79	3490	94 105																
-5	78	6180	78	4670	79	4350	80	4070	81	3800	96 106	-5	78	6130	78	4640	78	4220	78	3830	79	3540	94 105																
0	77	6130	78	4840	79	4540	81	4250	82	3970	96 106	0	77	6070	77	4600	77	4240	78	3960	79	3700	94 105																
5	75	6080	79	5070	80	4750	81	4450	82	4150	96 106	5	75	6010	77	4720	78	4430	79	4140	80	3870	94 105																
10	76	6400	80	5330	81	5000	82	4680	83	4370	96 106	10	74	5970	78	4970	79	4660	80	4360	81	4070	94 104																
15	78	6770	81	5640	82	5290	83	4950	84	4630	96 106	15	75	6310	79	5250	80	4920	81	4600	82	4300	94 104																
20	79	7170	82	5980	83	5610	84	5250	85	4910	96 106	20	77	6680	80	5560	81	5210	82	4880	83	4560	94 104																
25	80	7630	83	6360	84	5960	85	5580	86	5220	96 106	25	78	7090	81	5910	82	5540	83	5180	84	4840	94 104																
29	81	8040	84	6690	85	6270	86	5880	87	5490	96 106	29	79	7460	82	6210	83	5820	84	5450	85	5090	94 104																
												30	79	7550	82	6290	83	5890	84	5520	85	5160	94 104																
												33	80	7850	83	6530	84	6120	85	5730	85	5350	94 104																

TAKEOFF FIELD LENGTH - FEET WET RUNWAY OVER 15 FOOT SCREEN HEIGHT

FLAPS - 15° 10,000 FEET

CONDITIONS: RUNWAY GRADIENT - ZERO
LANDING GEAR - DOWN
ANTI-ICE SYSTEMS - OFF

SPEED BRAKES - RETRACT
INOPERATIVE ENGINE - WINDMILLING AFTER V1
OPERATIVE ENGINE - TAKEOFF THRUST

SOME CONDITIONS DO NOT MEET CLIMB REQUIREMENTS. OBTAIN ALLOWABLE WEIGHT FROM MAXIMUM TAKEOFF WEIGHT TABLES.

WEIGHT = 13500 LBS								VENR = 155 KIAS								WEIGHT = 13000 LBS								VENR = 154 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS														
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS															
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT															
-35	85	6310	85	4780	85	4350	85	3950	85	3580	92	104	-35	85	6300	85	4790	85	4360	85	3970	85	3600	90	103						
-30	84	6280	84	4760	84	4330	84	3940	84	3570	92	104	-30	84	6260	84	4770	84	4340	84	3950	84	3580	90	102						
-25	83	6250	83	4740	83	4310	83	3920	83	3550	92	104	-25	83	6230	83	4740	83	4320	83	3920	83	3560	90	102						
-20	82	6220	82	4720	82	4290	82	3900	82	3530	92	103	-20	82	6190	82	4710	82	4290	82	3900	82	3540	90	102						
-15	81	6180	81	4690	81	4270	81	3880	81	3510	92	103	-15	81	6150	81	4680	81	4260	81	3880	81	3510	90	102						
-10	79	6140	79	4660	79	4240	79	3850	79	3490	92	103	-10	80	6100	80	4650	80	4230	80	3840	80	3490	90	101						
-5	78	6090	78	4620	78	4200	78	3820	78	3460	92	103	-5	78	6050	78	4610	78	4200	78	3810	78	3460	90	101						
0	77	6020	77	4570	77	4160	77	3780	77	3440	92	103	0	77	5980	77	4560	77	4150	77	3770	77	3410	90	101						
5	76	5960	76	4520	76	4120	76	3750	76	3390	92	103	5	76	5910	76	4500	76	4100	76	3720	76	3370	90	101						
10	74	5850	76	4620	77	4330	78	4050	79	3780	92	103	10	74	5800	74	4410	74	4020	75	3760	76	3510	90	101						
15	73	5870	77	4880	78	4580	79	4280	80	3990	92	103	15	72	5670	74	4530	75	4250	76	3970	77	3700	90	101						
20	74	6210	78	5160	79	4840	80	4530	80	4230	92	103	20	72	5770	75	4800	76	4490	77	4200	78	3910	90	101						
25	76	6590	79	5480	80	5140	81	4810	81	4490	92	103	25	73	6120	76	5080	77	4760	78	4450	79	4150	90	101						
30	77	7000	80	5830	81	5460	82	5110	83	4770	92	103	30	75	6490	78	5390	79	5050	79	4730	80	4410	90	101						
33	78	7270	81	6050	81	5670	82	5300	83	4950	92	103	34	76	6810	79	5660	79	5310	80	4960	81	4630	90	101						
34	78	7360	81	6120	82	5740	83	5370	83	5020	92	103																			

WEIGHT = 12500 LBS								VENR = 153 KIAS				WEIGHT = 12000 LBS								VENR = 152 KIAS					
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S				VR V2 KIAS						
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS	10 KTS			V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS									
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT									
-35	85	6300	85	4800	85	4380	85	3990	85	3620	89	101	-35	86	6310	86	4830	86	4410	86	4020	86	3650	87	101
-30	84	6260	84	4780	84	4350	84	3960	84	3600	89	101	-30	85	6260	85	4800	85	4380	85	3990	85	3620	87	100
-25	83	6220	83	4750	83	4330	83	3940	83	3580	89	101	-25	83	6220	83	4760	83	4350	83	3960	83	3600	87	100
-20	82	6180	82	4720	82	4300	82	3910	82	3550	89	101	-20	82	6170	82	4730	82	4310	82	3930	82	3570	87	99
-15	81	6130	81	4680	81	4270	81	3880	81	3520	88	100	-15	81	6120	81	4690	81	4280	81	3900	81	3540	87	99
-10	80	6080	80	4640	80	4230	80	3850	80	3490	88	100	-10	80	6070	80	4650	80	4240	80	3860	80	3510	87	99
-5	79	6030	79	4600	79	4190	79	3810	79	3460	88	100	-5	79	6010	79	4600	79	4200	79	3820	79	3470	87	98
0	77	5950	77	4540	77	4140	77	3770	77	3420	88	99	0	78	5930	78	4540	78	4140	78	3770	78	3420	86	98
5	76	5880	76	4490	76	4090	76	3720	76	3370	88	99	5	76	5850	76	4480	76	4080	76	3720	76	3370	86	98
10	74	5760	74	4390	74	4000	74	3640	74	3290	88	99	10	75	5730	75	4380	75	3990	75	3630	75	3290	86	97
15	73	5630	73	4290	73	3930	74	3670	75	3420	88	99	15	73	5590	73	4270	73	3890	73	3540	73	3200	86	97
20	71	5490	73	4440	74	4160	75	3880	76	3620	88	99	20	71	5450	71	4160	71	3840	72	3580	73	3340	86	97
25	71	5660	74	4700	75	4410	76	4110	77	3830	88	99	25	69	5310	72	4340	73	4060	74	3790	74	3540	86	97
30	72	6000	75	4980	76	4670	77	4360	78	4070	88	99	30	70	5550	73	4600	74	4300	75	4020	75	3750	86	97
34	73	6300	76	5230	77	4900	78	4580	79	4270	88	99	34	71	5820	74	4820	75	4510	75	4220	76	3930	86	97

WEIGHT = 11500 LBS								VENR = 151 KIAS								WEIGHT = 11000 LBS								VENR = 151 KIAS							
TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS	TEMP DEG C	TAILWIND		ZERO WIND		H E A D W I N D S			VR V2 KIAS														
	10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS			10 KTS	V1 DIST	V1 DIST	V1 DIST	10 KTS	20 KTS	30 KTS															
	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT			KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT	KIAS FT															
-35	86	6330	86	4870	86	4450	86	4060	86	3690	88	102	-35	86	6380	86	4920	86	4500	86	4110	86	3740	89	103						
-30	85	6290	85	4830	85	4410	85	4020	85	3660	87	100	-30	85	6320	85	4870	85	4460	85	4070	85	3710	87	101						
-25	84	6230	84	4790	84	4380	84	3990	84	3630	85	99	-25	84	6260	84	4830	84	4420	84	4030	84	3670	86	100						
-20	83	6180	83	4750	83	4340	83	3960	83	3600	85	98	-20	83	6210	83	4790	83	4380	83	3990	83	3640	85	98						
-15	81	6130	81	4710	81	4300	81	3920	81	3560	85	98	-15	82	6150	82	4740	82	4330	82	3950	82	3600	83	97						
-10	80	6060	80	4660	80	4250	80	3880	80	3530	85	97	-10	81	6080	81	4680	81	4280	81	3910	81	3560	83	96						
-5	79	6000	79	4610	79	4210	79	3830	79	3490	85	97	-5	79	6010	79	4630	79	4230	79	3860	79	3510	83	96						
0	78	5920	78	4540	78	4150	78	3780	78	3430	85	97	0	78	5920	78	4560	78	4170	78	3800	78	3460	82	95						
5	76	5830	76	4480	76	4090	76	3720	76	3380	84	96	5	77	5830	77	4490	77	4100	77	3740	77	3400	82	95						
10	75	5700	75	4380	75	3990	75	3630	75	3300	84	96	10	75	5690	75	4380	75	4000	75	3640	75	3310	82	94						
15	73	5560	73	4260	73	3890	73	3530	73	3210	84	95	15	73	5540	73	4260	73	3890	73	3540	73	3210	82	94						
20	71	5420	71	4150	71	3780	71	3430	71	3110	84	95	20	71	5390	71	4140	71	3770	71	3430	71	3110	82	94						
25	69	5270	69	4030	70	3740	71	3490	72	3250	84	95	25	70	5240	70	4010	70	3660	70	3320	70	3010	82	93						
30	67	5130	70	4230	71	3960	72	3700	73	3440	84	95	30	68	5090	68	3900	68	3630	69	3380	70	3150	82	93						
34	68	5360	71	4440	72	4150	73	3870	74	3610	84	95	34	66	4980	68	4070	69	3800	70	3550	71	3300	82	93						

DATA FOR WET, SLUSH, SNOW AND ICE COVERED RUNWAYS (Continued)

ADVERSE RUNWAY TAKEOFF PERFORMANCE

Determine the takeoff field length using Figure 4-18 (flaps 7°) or Figure 4-20 (flaps 15°) in Section IV of the basic Airplane Flight Manual for a dry runway, anti-ice systems off. For anti-ice on or for runway gradients, make adjustments using the following notes. From Figure 7-5 (flaps 7°) or Figure 7-6 (flaps 15°) determine the takeoff field length for the precipitation type and depth. From Figure 7-9 determine the takeoff field length for wet or ice covered runways using one thrust reverser. Data is based on one reverser operative during an aborted takeoff due to engine failure.

NOTE

- If the runway has a gradient, the dry takeoff field length must be adjusted in accordance with the takeoff correction factors in Section IV before applying Figure 7-5, Figure 7-6, or Figure 7-9.
- If the anti-ice systems are on, the dry takeoff field length must be adjusted in accordance with the takeoff correction factors in Section IV before applying Figure 7-5, Figure 7-6, or Figure 7-9.

EXAMPLE FOR TAKEOFF WITH 15 DEGREE FLAPS:

Pressure Altitude = 1000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 13,500 POUNDS	Anti-Ice Systems = ON
Ambient Temperature = 10°C	Runway Condition = 0.125 INCHES of slush
Wind = 30 KNOTS (HEADWIND)	

From Figure 4-20, the Takeoff Field Length is 2,000 FEET (dry runway, anti-ice systems off). $V_1 = 88$ KNOTS.

Using the anti-ice ON correction factor from Section IV for 15° flaps, the anti-ice systems ON Takeoff Field Length = $2,000 \times 1.10 = 2,200$ FEET. $V_1 = 88 + 1 = 89$ KNOTS.

From Figure 7-6, for a takeoff from a runway covered with 0.125 inches of slush, Takeoff Field Length = 6,450 FEET. $V_1 = 89$ KNOTS.

EXAMPLE FOR TAKEOFF WITH ONE THRUST REVERSER:

Pressure Altitude = 1000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 13,500 POUNDS	Anti-Ice Systems = ON
Ambient Temperature = 10°C	Runway Condition = WET
Wind = 30 KNOTS (HEADWIND)	

From Figure 4-20, the Takeoff Field Length is 2,000 FEET (dry runway, anti-ice systems off). $V_1 = 88$ KNOTS.

Using the anti-ice ON correction factor from Section IV for 15° flaps, the anti-ice systems ON Takeoff Field Length = $2,000 \times 1.10 = 2,200$ FEET. $V_1 = 88 + 1 = 89$ KNOTS.

From Figure 7-9, for a takeoff on a wet runway with one thrust reverser, Takeoff Field Length = 2,710 FEET. $V_1 = 89$ KNOTS.

WET AND ADVERSE RUNWAY LANDING PERFORMANCE

Determine the landing distance using Figure 4-35 (flaps full) in Section IV of the basic Airplane Flight Manual for a dry runway. From Figure 7-7 (V_{REF}) and Figure 7-8 ($V_{REF} + 10$ KNOTS), determine the landing distance for the precipitation type and depth. The difference between Figure 7-7 (V_{REF}) and Figure 7-8 ($V_{REF} + 10$ KNOTS) presents the comparison in distances of an overspeed at V_{REF} . From Figure 7-10 determine the landing distance for wet or ice covered runways using two thrust reversers.

NOTE

- If the runway has a gradient, the dry landing distance must be adjusted in accordance with the landing distance correction factors in Section IV before applying Figure 7-7, Figure 7-8, or Figure 7-10.
- The published limiting maximum tailwind component for this airplane is 10 knots. However, landings on precipitation covered runways with any tailwind component are not recommended.

EXAMPLE FOR LANDING WITH FULL FLAPS:

Pressure Altitude = 1000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 14,000 POUNDS	Anti-Ice Systems = OFF
Ambient Temperature = 5°C	Runway Condition = 0.125 INCHES of water
Wind = ZERO KNOTS	V_{REF}

From Figure 4-35, the Landing Distance is 2,600 FEET (dry runway, anti-ice systems on or off). $V_{REF} = 103$ KNOTS.

From Figure 7-7, for a landing at V_{REF} ($V_{REF} = 103$ KNOTS) on a runway covered with 0.125 inches of water, the Landing Distance is 5,800 FEET.

FOR COMPARISON OF OVERSPEED:

From Figure 7-8, for a landing at $V_{REF} + 10$ KNOTS ($V_{REF} = 113$ KNOTS) on a runway covered with 0.125 inches of water, the Landing Distance is 6,950 FEET.

EXAMPLE FOR LANDING WITH FULL FLAPS USING THRUST REVERSERS:

Pressure Altitude = 2000 FEET	Runway Gradient = ZERO (level)
Gross Weight = 15,000 POUNDS	Anti-Ice Systems = OFF
Ambient Temperature = 20°C	Runway Condition = WET
Wind = 10 KNOTS (HEADWIND)	V_{REF}

From Figure 4-35, the Landing Distance is 2,800 FEET (dry runway, no thrust reversers, anti-ice systems off). $V_{REF} = 106$ KNOTS

From Figure 7-10, for a landing on a wet runway using two thrust reversers, the Landing Distance is 2,865 FEET.

TAKEOFF FIELD LENGTH - FEET

FLAPS - 7 DEGREES

DRY RUNWAY NO THRUST REVERSERS	ADVERSE RUNWAY CONDITIONS (NO THRUST REVERSERS, 15 FT SCREEN HEIGHT)											
	WATER COVERED RUNWAY-INCHES				SLUSH COVERED RUNWAY-INCHES				SNOW-INCHES		COMPACT	WET
	0.125	0.2	0.3	*0.4	0.125	0.2	**0.3	***0.4	1.0	2.0	SNOW	ICE
1600	4600	4400	4100	4100	4850	4600	4400	4200	4950	4700	2750	12100
1800	5600	5050	4650	4500	5300	5200	4950	4700	5750	5300	3200	13800
2000	6000	5550	5250	5000	6150	5650	5500	5150	6450	5900	3550	15000
2200	6750	6300	5850	5500	6700	6200	6100	5600	7200	6500	3900	
2400	7850	6950	6350	6000	7450	6950	6650	6050	7850	7100	4250	
2600	8750	7800	6950	6400	8200	7650	7200	6500	8600	7750	4500	
2800	9700	8500	7500	6900	9100	8300	7800	7000	9250	8300	4800	
3000	10600	9250	8050	7350	10000	9000	8350	7500	9900	8950	5100	
3200	11350	9950	8550	7800	10850	9650	8850	8000	10600	9400	5300	
3400	12100	10600	9100	8200	11500	10450	9300	8500	11200	10000	5600	
3600	12600	11150	9650	8650	12100	10950	9600	9000	11700	10500	5800	
3800	13200	11700	10250	9100	12700	11400	9950	9500	12250	11000	6000	
4000	13800	12200	10650	9500	13100	11800	10400	10100	12600	11350	6150	
4200	14200	12600	11100	9900	13450	12200	10750	10600	13000	11750	6300	
4400	14700	13000	11600	10250	13850	12600	11200	11200	13400	12100	6450	
4600	15200	13450	11900	10650	14200	13000	11550	11700	13750	12500	6600	
4800		13800	12200	11000	14550	13300	11950	12100	14150	12900	6800	
5000		14200	12550	11350	14850	13650	12300	12450	14500	13250	6950	
5200		14550	12950	11650	15200	14000	12650	12800	14800	13600	7100	
5400		14950	13300	12000		14250	13000	13100	15150	13950	7250	
5600		15250	13600	12350		14600	13400	13400		14250	7450	
5800			13950	12700		14950	13700	13700		14600	7600	
6000			14300	13000		15200	14000	14000		14850	7800	
6200			14550	13350			14300	14250		15150	8000	
6400			14900	13700			14600	14500			8200	
6600			15200	14000			14850	14750			8350	
6800				14350			15050	15000			8500	
7000				14700							8700	
7200				15000							8900	
7400											9050	
7600											9200	
7800											9400	
8000											9550	
8800											10200	
9600											11000	
10400											11650	
11200											12450	
12000											13200	
12800											14000	
13800											15000	

* Takeoffs on a .4 inch water-covered runway at altitudes above 8,000 FT, or at temperatures greater than ISA +15 Degrees Celsius should not be attempted.

** Takeoffs on a .3 inch slush-covered runway at altitudes above 10,000 FT, or at temperatures greater than ISA +30 Degree Celsius, or at temperatures greater than 35 Degrees Celsius should not be attempted.

*** Takeoffs on a .4 inch slush-covered runway at altitudes above 6,000 FT, or at temperatures above 25 Degrees Celsius should not be attempted.



Figure 7-5

TAKEOFF FIELD LENGTH - FEET

FLAPS - 15 DEGREES

DRY RUNWAY NO THRUST REVERSERS	ADVERSE RUNWAY CONDITIONS (NO THRUST REVERSERS, 15 FT SCREEN HEIGHT)									
	WATER COVERED RUNWAY-INCHES			SLUSH COVERED RUNWAY-INCHES			SNOW-INCHES		COMPACT SNOW	WET ICE
	0.125	0.2	*0.3	0.125	0.2	*0.3	1.0	2.0		
1600	4500	4100	4100	4650	4300	4450	4700	4600	2800	11300
1800	5100	4800	4600	5150	4950	4850	5400	5200	3250	12900
2000	5800	5500	5000	5850	5400	5250	6100	5800	3600	14050
2200	6500	6150	5600	6450	6100	5700	6900	6400	4000	15300
2400	7300	6800	6000	7050	6600	6100	7600	6900	4350	
2600	8000	7450	6500	7750	7200	6500	8350	7500	4600	
2800	8800	8100	7050	8500	7700	7100	9000	8000	4950	
3000	9500	8700	7400	9250	8300	7550	9600	8600	5200	
3200	10400	9300	8000	9950	8900	8150	10300	9200	5400	
3400	11250	9850	8600	10750	9600	8700	10850	9700	5700	
3600	12000	10400	9000	11600	10200	9200	11500	10100	6000	
3800	12550	10900	9600	12150	10700	9500	11900	10600	6200	
4000	13000	11400	10050	12700	11100	9950	12300	11000	6400	
4200	13400	11850	10350	13050	11500	10400	12700	11400	6600	
4400	13900	12300	10600	13450	12000	10700	13050	11800	6800	
4600	14250	12700	11000	13850	12350	11300	13450	12150	7000	
4800	14700	13100	11200	14200	12750	11600	13800	12500	7200	
5000	15000	13500	11550	14600	13150	11900	14200	12850	7400	
5200		13900	11800	15000	13450	12300	14550	13200	7600	
5400		14300	12200		13900	12550	14900	13550	7800	
5600		14700	12600		14200	12850	15200	13950	8000	
5800		15050	12950		14600	13100		14250	8200	
6000			13200		14950	13350		14600	8350	
6200			13600		15250	13600		15000	8500	
6400			13900			14000			8650	
6600			14200			14300			8800	
6800			14550			14700			9000	
7000			14900			15000			9150	
8000			15200						9900	
9000									10750	
10000									11500	
11000									12200	
12000									12900	
13800									13600	

*Takeoffs on a .3 inch water-covered runway at altitudes above 10,000 FT should not be attempted.

**Takeoffs on a .3 inch slush-covered runway at altitudes above 8,000 FT or at temperatures greater than ISA + 25 Degrees Celsius should not be attempted.



Figure 7-6

LANDING DISTANCE - FEET

FULL FLAPS

DRY RUNWAY WITHOUT THRUST REVERSERS	ADVERSE RUNWAY CONDITIONS (NO THRUST REVERSERS, VREF, WITHOUT TAILWINDS, 50 FT SCREEN HEIGHT)														
	WET RUNWAY	WATER COVERED RUNWAY-INCHES					SLUSH COVERED RUNWAY-INCHES					SNOW-INCHES		COMPACT SNOW	WET ICE
		0.125	0.2	0.3	0.4	0.5	0.125	0.2	0.3	0.4	0.5	1.0	2.0		
1400	1900	2760	2700	2500	2350	2400	2800	2800	2700	2600	2500	2800	2800	2200	7200
1600	2200	3200	3150	3000	2800	2750	3250	3150	3000	3000	2850	3300	3200	2500	9300
1800	2600	3650	3550	3500	3300	3000	3700	3550	3400	3400	3200	3800	3500	2800	11400
2000	2850	4200	4000	4000	3750	3450	4200	4000	3800	3750	3550	4200	4000	3150	13700
2200	3200	4700	4500	4600	4250	3800	4600	4400	4150	4150	3900	4600	4400	3400	16700
2400	3550	5300	4900	5100	4750	4150	5100	4900	4600	4400	4250	5150	4850	3750	
2600	3800	5800	5400	5600	5200	4600	5600	5300	5050	4800	4600	5600	5250	4000	
2800	4100	6350	5950	6150	5700	4950	6050	5800	5400	5200	4950	6000	5650	4300	
3000	4400	6850	6400	6650	6200	5300	6600	6250	5850	5550	5300	6400	6000	4600	
3200	4750	7300	6900	7250	6650	5750	7050	6750	6300	5900	5650	6900	6400	4850	
3400	5000	7800	7400	7800	7150	6100	7550	7200	6700	6350	6000	7300	6800	5000	
3600	5350	8350	7900	8400	7650	6500	8150	7700	7150	6700	6350	7800	7200	5300	
3800	5600	8850	8400	9000	8150	6850	8600	8200	7600	7100	6650	8200	7600	5500	
4000	5950	9400	8800	9600	8700	7250	9100	8550	8000	7500	7050	8600	7950	5650	
4200	6250	9850	9300	10200	9300	7650	9600	9000	8400	7850	7400	9000	8350	5800	
4400	6550	10300	9700	10650	9800	8000	10050	9400	8800	8200	7800	9400	8650	6000	
4600	6900	10800	10100	11250	10350	8400	10400	9800	9200	8600	8100	9800	9000	6200	
4800	7200	11200	10550	11800	10800	8700	10900	10300	9550	9000	8450	10200	9350	6350	
5000	7500	11600	10900	12350	11300	9100	11300	10650	9950	9400	8800	10600	9700	6550	
5200	7800	12000	11350	12850	11700	9400	11700	11050	10300	9750	9150	11000	10000	6700	
5400	8200	12400	11750	13400	12150	9800	12100	11400	10650	10100	9450	11400	10400	6850	
5600	8500	12800	12100	13850	12600	10050	12500	11800	11000	10500	9800	11800	10650	7000	
5800	8800	13200	12400	14400	13000	10400	12900	12200	11350	10800	10200	12200	11000	7150	
6000	9150	13500	12800	14800	13400	10750	13300	12550	11650	11200	10500	12500	11200	7300	
6200	9400	13800	13200	15250	13800	11000	13600	12800	12000	11500	10800	12800	11500	7400	
6400	9800	14200	13550		14200	11350	14000	13200	12350	11800	11150	13200	11800	7550	
6600	10150	14500	13950		14600	11700	14400	13600	12700	12200	11450	13500	12100	7700	
6800	10500	14800	14300		14950	12000	14800	13900	13000	12550	11800	13900	12400	7800	
7000	10800	15100	14650			12350	15200	14200	13400	12800	12100	14250	12700	7950	
7200	11200		15050			12650		14550	13700	13150	12400	14600	12950	8050	
7400	11500					13000		14850	14000	13450	12700	15000	13250	8200	
7600	11850					13300		15200	14350	13800	13000		13500	8300	
7800	12200					13650			14650	14100	13300		13800	8400	
8000	12600					14000			15000	14400	13600		14100	8500	
8200	12900					14350				14700	13900		14400	8600	
8400	13250					14600				15000	14200		14700	8700	
8600	13600					14950					14400		15000	8850	
8800	14000										14700			8950	
9000	14350										15000			9050	
9200	14700													9200	
9400	15000													9400	
9800														9800	
10600														10600	
11400														11400	
12200														12200	
13000														13000	

NOTE

The published limiting maximum tailwind component for this airplane is 10 knots; however, Cessna does not recommend landings on precipitation-covered runways with any tailwind component. If a tailwind landing cannot be avoided, multiply the above data by the following factor:

TAILWIND FACTOR	WET RUNWAY	WATER COVERED RUNWAY-INCHES					SLUSH COVERED RUNWAY-INCHES					SNOW-INCHES		COMPACT SNOW	WET ICE
		0.125	0.2	0.3	0.4	0.5	0.125	0.2	0.3	0.4	0.5	1.0	2.0		
	1.04	1.07	1.06	1.07	1.07	1.06	1.07	1.07	1.07	1.05	1.05	1.08	1.08	1.05	*

* Landings with any tailwind should not be attempted on wet ice.

 Figure 7-7

LANDING DISTANCE - FEET

FULL FLAPS

DRY RUNWAY WITHOUT THRUST REVERSERS	ADVERSE RUNWAY CONDITIONS (NO THRUST REVERSERS, VREF+10, WITHOUT TAILWINDS, 50 FT SCREEN HEIGHT)														
	WET RUNWAY	WATER COVERED RUNWAY-INCHES					SLUSH COVERED RUNWAY-INCHES					SNOW-INCHES		COMPACT SNOW	WET ICE
		0.125	0.2	0.3	0.4	0.5	0.125	0.2	0.3	0.4	0.5	1.0	2.0		
1400	2400	3250	3150	2900	2850	2750	3300	3250	3200	3000	2900	3400	3200	2600	8400
1600	2800	3850	3700	3550	3350	3200	3900	3750	3600	3400	3300	4000	3750	3000	9800
1800	3100	4400	4200	4100	3800	3600	4400	4200	4000	3800	3700	4500	4300	3400	11700
2000	3500	5050	4800	4750	4400	4050	4950	4800	4500	4250	4100	5150	4800	3800	14700
2200	3900	5650	5300	5350	4950	4500	5550	5250	5000	4700	4500	5600	5250	4100	
2400	4250	6350	6000	6000	5500	4950	6150	5800	5400	5200	5000	6200	5800	4400	
2600	4700	6950	6500	6650	6100	5450	6800	6400	5900	5650	5400	6800	6200	4750	
2800	5000	7550	7200	7350	6800	5950	7400	7000	6500	6100	5800	7200	6750	5150	
3000	5400	8200	7750	8000	7400	6350	7950	7500	6950	6600	6300	7700	7200	5400	
3200	5900	8900	8350	8750	8050	6850	8600	8050	7500	7000	6750	8250	7600	5800	
3400	6250	9450	8900	9450	8650	7300	9200	8650	8000	7550	7150	8800	8100	6000	
3600	6700	10050	9400	10150	9400	7800	9800	9200	8600	8050	7650	9250	8500	6350	
3800	7100	10650	10100	10900	10050	8350	10400	9800	9100	8600	8100	9850	9000	6600	
4000	7600	11200	10650	11600	10750	8800	11000	10400	9700	9150	8600	10400	9450	6800	
4200	8000	11800	11200	12200	11350	9300	11600	10900	10200	9600	9000	10950	9950	7050	
4400	8400	12350	11750	12900	12000	9850	12150	11600	10800	10200	9500	11550	10400	7300	
4600	8850	12900	12300	13600	12550	10350	12750	12100	11250	10600	10000	12100	10900	7500	
4800	9350	13400	12850	14200	13150	10850	13350	12600	11800	11150	10450	12600	11400	7750	
5000	9750	13950	13300	14800	13650	11400	13900	13150	12250	11600	10950	13300	11900	7950	
5200	10100	14500	13900	15400	14250	12000	14450	13750	12800	12200	11450	13900	12400	8200	
5400	10600	15000	14350		14650	12550	15000	14350	13350	12700	11950	14500	12900	8400	
5600	11150		14850		15150	13150		15000	13900	13250	12450	15000	13400	8600	
5800	11650		15300			13750			14450	13800	12950		13950	8800	
6000	12150					14350			15050	14400	13450		14500	9000	
6200	12700					15000				15000	13950		15050	9200	
6400	13200										14500			9450	
6600	13800										15000			9650	
6800	14350													9850	
7000	15000													10000	
7200														10200	
8000														10950	
8800														11700	
9600														12400	
10400														13100	
11200														13800	
12000														14450	
12800														15100	

NOTE

The published limiting maximum tailwind component for this airplane is 10 knots; however, Cessna does not recommend landings on precipitation-covered runways with any tailwind component. If a tailwind landing cannot be avoided, multiply the above data by the following factor:

TAILWIND FACTOR	WET RUNWAY	WATER COVERED RUNWAY-INCHES					SLUSH COVERED RUNWAY-INCHES					SNOW-INCHES		COMPACT SNOW	WET ICE
		0.125	0.2	0.3	0.4	0.5	0.125	0.2	0.3	0.4	0.5	1.0	2.0		
	1.02	1.06	1.04	1.04	1.04	1.03	1.05	1.04	1.04	1.03	1.03	1.05	1.04	1.03	*

* Landings with any tailwind should not be attempted on wet ice.



Figure 7-8

THRUST REVERSER TAKEOFF

PRECIPITATION COVERED RUNWAYS

TAKEOFF FIELD LENGTH		
DRY, HARD SURFACE WITHOUT THRUST REVERSER	WET CONCRETE WITH ONE THRUST REVERSER	ICE WITH ONE THRUST REVERSER
1400	1440	2360
1600	1800	2740
1800	2110	3080
2000	2410	3420
2200	2710	3755
2400	2975	4050
2600	3240	4335
2800	3490	4595
3000	3720	4830
3200	3935	4965
3400	4140	5230
3600	4325	5400
3800	4500	5560
4000	4665	5710
4200	4850	5890
4400	5020	6060
4600	5180	6220
4800	5360	6400
5000	5520	6560
5200	5710	6750
5400	5880	6920
5600	6070	7110
5800	6245	7285
6000	6420	7460
6200	6620	7660
6400	6810	7850
6600	7000	8040
6800	7190	8230
7000	7380	8420
7200	7570	8610
7400	7770	8810
7600	7960	9000
7800	8160	9200
8000	8350	9390



Figure 7-9

THRUST REVERSER LANDING

PRECIPITATION COVERED RUNWAYS

LANDING DISTANCE		
DRY, HARD SURFACE WITHOUT THRUST REVERSER	WET CONCRETE WITH TWO THRUST REVERSERS	ICE WITH TWO THRUST REVERSERS
1800	1820	2410
2000	2070	2865
2200	2290	3175
2400	2495	3410
2600	2685	3630
2800	2865	3820
3000	3040	3990
3200	3220	4150
3400	3400	4310
3600	3600	4460
3800	3800	4610
4000	4000	4760

 Figure 7-10

SINGLE PILOT OPERATIONS - CREW TRAINING REQUIREMENTS

In addition to the minimum crew requirements specified in Section 2, Limitations, aircraft operated under FAR 91 may be exempt from the second in command requirement of FAR 91.531. Consult FAA Exemption No. 4050G, applicable to the Cessna model 560 and Cessna Service Letter 560-03-01 for detailed aircraft equipment criteria as well as crew training requirements for single pilot operations.

GROUND DEICE/ANTI-ICE OPERATIONS

During cold weather operations, flight crews are responsible for ensuring the airplane is free of ice contaminants.

Ground icing may occur whenever there is high humidity with temperatures of +10°C or colder. Type I deice, and Type II or Type IV anti-ice fluids may be used sequentially to ensure compliance with FAA regulations (clean wing concept) requiring critical component airframe deicing and anti-icing.

NOTE

It is recommended that flight crews refamiliarize themselves seasonally with the following publications for expanded deice and anti-ice procedures:

- Cessna Maintenance Manual Chapter 12.
- FAA Advisory Circular AC 120-58 (large aircraft), dated September 30, 1992 or later.
- FAA Advisory Circular AC 135-17 (small aircraft), dated December 14, 1994 or later.
- Cessna Citation Service Letter 560-30-08, dated May 29, 1998 or later.

DEICING/ANTI-ICING PROCEDURES (TYPE I, TYPE II, AND TYPE IV FLUIDS)

ONE STEP DEICING - Type I fluid is used to remove ice, slush and snow from the airplane prior to departure, and to provide minimal anti-icing protection as provided in the Type I holdover timetable (refer to applicable service letter).

TWO STEP DEICE/ANTI-ICE - May be used to ensure the airplane remains clean after deicing. Type II or Type IV fluid is used to provide longer term anti-icing protection as provided in the Type II or Type IV holdover timetable (refer to applicable service letter).

CAUTION

TYPE I, TYPE II, AND TYPE IV FLUIDS ARE NOT COMPATIBLE AND MAY NOT BE MIXED. ADDITIONALLY, MOST MANUFACTURERS PROHIBIT MIXING OF BRANDS WITHIN A TYPE.

(Continued Next Page)

DEICING/ANTI-ICING PROCEDURES (TYPE I, TYPE II, AND TYPE IV FLUIDS) (Continued)

Line personnel should be supervised by the PIC or SIC to ensure proper application of deice or anti-ice, fluids. Refer to Figures 7-11 and 7-12.

NOTE

The first area to be deiced/anti-iced should be easily visible from the cabin/cockpit and should be used to provide a conservative estimate for unseen areas of the airplane before initiating takeoff roll.

Holdover timetables (refer to applicable service letter) are only estimates and vary depending on many factors to include temperature, precipitation type, wind and airplane skin temperature. Holdover times are based on mixture ratio. Times start when the last application begins.

Guidelines for holdover times anticipated by SAE Type I, Type II, or Type IV, and ISO Type I, Type II, or TYPE IV fluid mixtures are a function of weather conditions and outside air temperature (OAT).

CAUTION

- AIRPLANE OPERATORS ARE SOLELY RESPONSIBLE FOR ENSURING HOLDOVER TIMETABLES CONTAIN CURRENT DATA.
- TABLES ARE FOR USE IN DEPARTURE PLANNING ONLY AND THEY SHOULD BE USED IN CONJUNCTION WITH THE PRETAKEOFF CONTAMINATION CHECK PROCEDURES.

NOTE

- Tables do not apply to other than SAE or ISO Type I, Type II or Type IV FPD fluids.
- The responsibility for the application of this data remains with the user.
- The freezing point of Type I, Type II, and Type IV fluid mixture must be at least 10°C (18°F) below the current OAT.

SPRAYING TECHNIQUE - TYPE I FLUID

Type I fluid should be sprayed on the airplane (with engines off) in a manner which minimizes heat loss to the air. If possible, fluid should be sprayed in a solid cone pattern of large coarse droplets at a temperature of 160° to 180°F. The fluid should be sprayed as close as possible to the airplane surfaces, but not closer than 10 feet if a high pressure nozzle is used. Refer to Figures 7-11 and 7-12 for essential areas to be deiced and anti-iced.

(Continued Next Page)

DEICING/ANTI-ICING PROCEDURES (TYPE I, TYPE II, AND TYPE IV FLUIDS) (Continued)

SPRAYING TECHNIQUE - TYPE II FLUID

Application techniques for Type II fluid are the same as for Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces. Refer to Figure 7-11 and 7-12 for essential areas to be deiced/anti-iced.

Type II, fluid should be applied cold to a "clean" airplane. It is, however, sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid, as the heat may change the characteristics of the thickening agents in the fluid. Type II fluid, therefore, applied in this manner, will not be as effective as if it were applied cold.

SPRAYING TECHNIQUE - TYPE IV FLUID

Application techniques for Type IV fluid are the same as for Type I, except that since the airplane is already clean, the application should last only long enough to properly coat the airplane surfaces. Refer to Figure 7-11 and 7-12 for essential areas to be deiced/anti-iced.

Type IV, fluid should be applied cold to a "clean" airplane. It is, however, sometimes heated and sprayed as a deicing fluid. For this case, it should be considered a Type I fluid, as the heat may change the characteristics of the thickening agents in the fluid. Type IV fluid, therefore, applied in this manner, will not be as effective as if it were applied cold.

NOTE

- Holdover time starts when last application has begun.
- Some Type IV fluids could form a thick or high-strength gel during "dry-out" and when rehydrated form a slippery film.
- Some Type IV fluids exhibit poor aerodynamic elimination (flow-off) qualities at colder temperatures.
- Heated areas of aircraft (i.e.; heated leading edge) should be avoided due to the fact that fluid may "dry-out" into hard globular nodules.
- Type IV fluid should not be used undiluted below -24°C (-11°F).

PRETAKEOFF CONTAMINATION CHECK - GROUND ICING CONDITIONS

When ground icing conditions are present, a pretakeoff contamination check should be conducted by the PIC/SIC within 5 minutes prior to takeoff, preferably just prior to taxiing onto the active runway. Critical areas of the airplane such as empennage, wing, windshield and control surfaces should be checked to ensure they are free of ice, slush and snow or that the deice/anti-ice fluids are still protecting the airplane. Refer to Figure 7-6 and 7-7 for essential areas to be deiced/anti-iced.

AIRPLANE DEICING

SHADED AREAS INDICATE ESSENTIAL AREAS TO BE DEICED

NOTE

AVOID DIRECT SPRAYING OF DEICING FLUID ON/IN THE FOLLOWING AREAS:

ENGINE INLETS
ENGINE EXHAUST
RAM AIR INLETS

BRAKES
WINDSHIELD
CABIN WINDOWS

PITOT HEADS
STATIC PORTS
AOA VANES

PAY SPECIAL ATTENTION TO
THE GAPS BETWEEN THE
FLIGHT CONTROLS. ALL
SNOW, ICE AND SLUSH MUST
BE REMOVED FROM THESE GAPS.

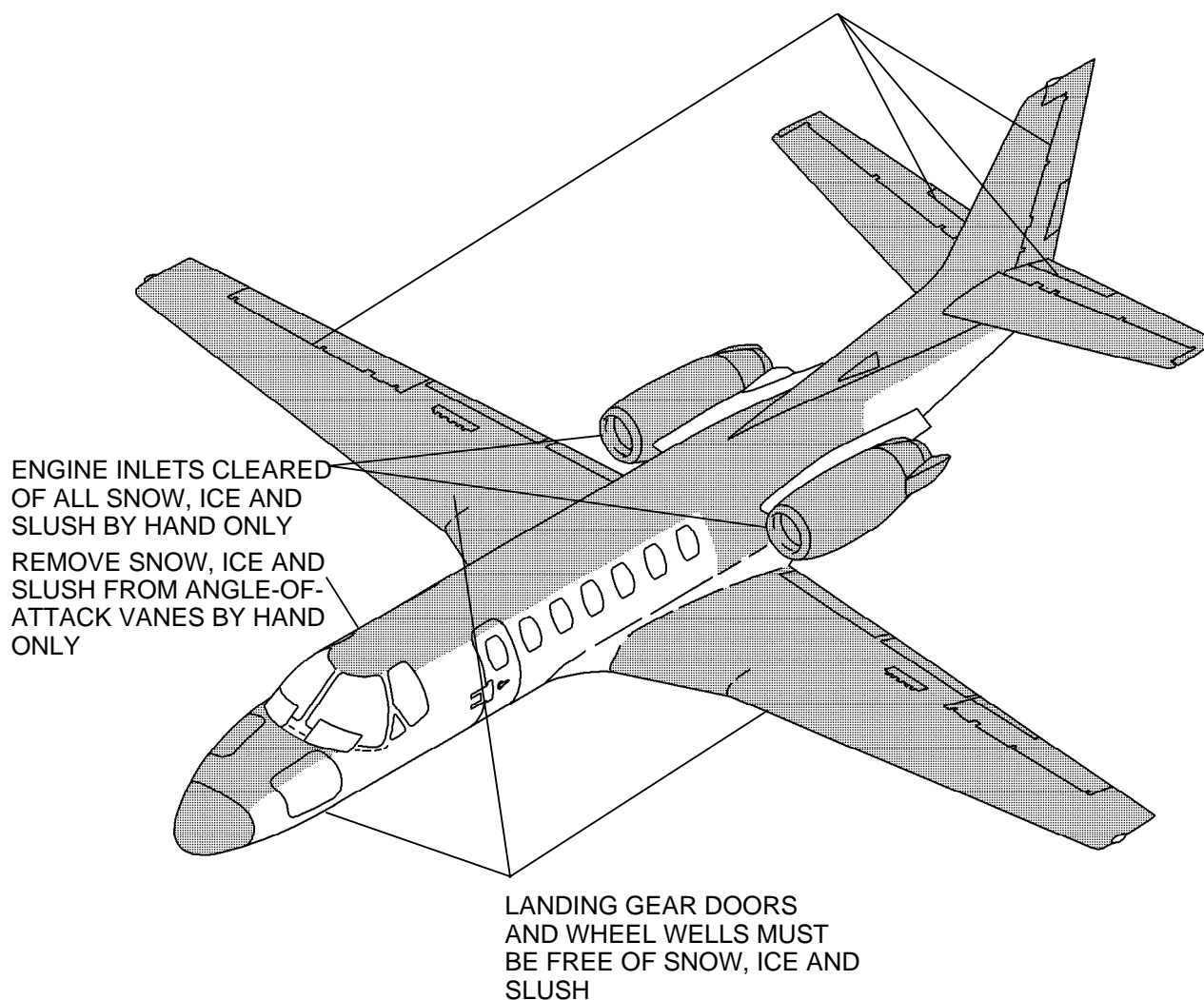


Figure 7-11

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AIRPLANE ANTI-ICING

SHADED AREAS INDICATE ESSENTIAL AREAS TO BE ANTI-ICED

NOTE

AVOID DIRECT SPRAYING OF ANTI-ICING FLUID ON/IN THE FOLLOWING AREAS:

ENGINE INLETS
ENGINE EXHAUST
RAM AIR INLETS

BRAKES
WINDSHIELD
CABIN WINDOWS

PITOT HEADS
STATIC PORTS
AOA VANES

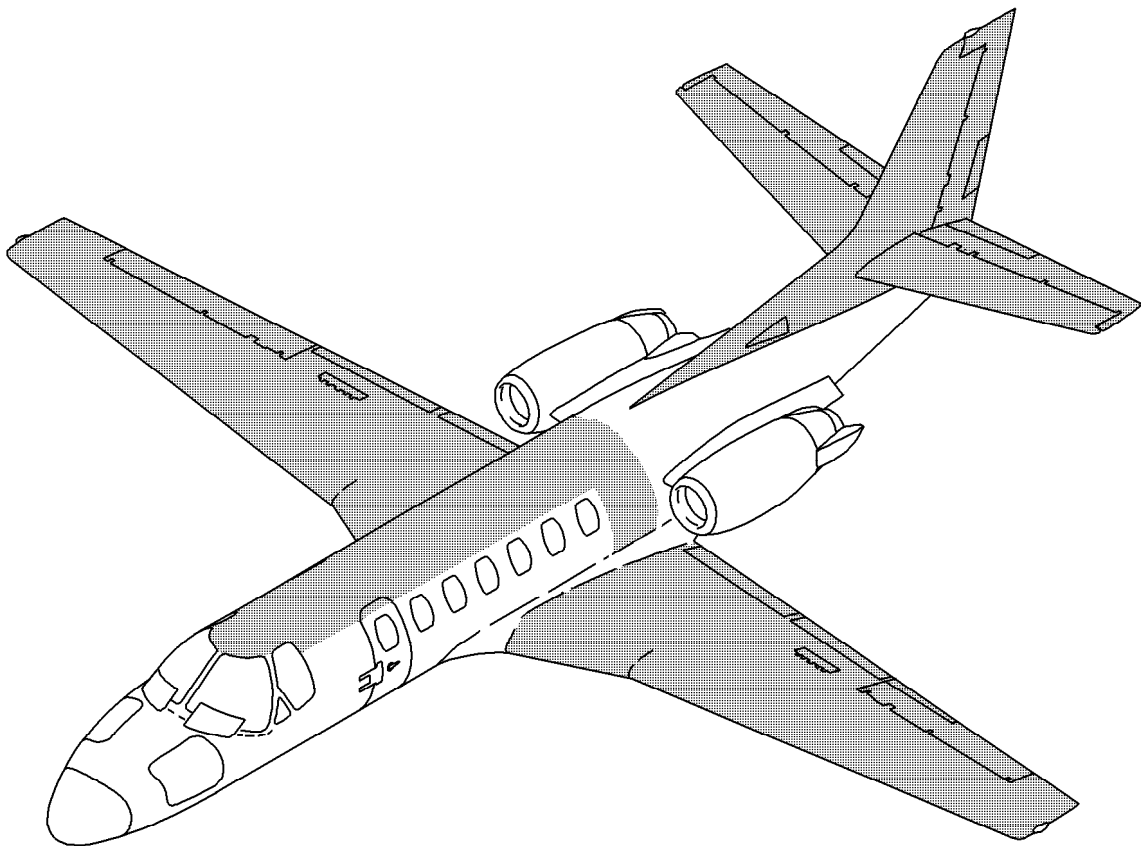


Figure 7-12

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